

# South Bay Transit First - Tier One Plan

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Prepared for:

## **Metropolitan Transit Development Board**

1255 Imperial Avenue, Suite 1000  
San Diego, CA 92101

Prepared by:



9370 Sky Park Court – Suite 200  
San Diego, CA 92123  
(858) 279-3776

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# Table of Contents



## PAGE

### Chapter 1: Introduction

1.1 PURPOSE.....	1-1
A. Tier One Alignments .....	1-1
B. Tier Two Alignments .....	1-4
1.2 CONGESTION LEVELS .....	1-4
1.3 PRIORITY TREATMENTS .....	1-7
1.4 STATION LOCATIONS AND TYPES .....	1-9
A. Station Requirements. ....	1-9
1.5 LAND USE OPPORTUNITIES.....	1-19
1.6 ACCESS .....	1-19

### Chapter 2: 510 Alignment

2.1 SUMMARY OVERVIEW AND CONCLUSIONS.....	2-1
A. 510 Alignment - Downtown San Diego to San Ysidro Border Crossing .....	2-1
B. Alignment Station Types.....	2-1
C. Priority Treatment Conclusions.....	2-1
2.2 510 ALIGNMENT ANALYSIS .....	2-5
A. Ridership Congestion .....	2-5
B. Traffic Congestion .....	2-6
C. Physical Constraints .....	2-6
D. Priority Treatments .....	2-6
E. Engineering and Environmental Issues .....	2-9
F. Feasibility of Priority Treatment Implementation.....	2-13
G. Conclusions.....	2-14
2.3 STATION LOCATION AND TYPES.....	2-15
A. 8 <sup>th</sup> Street Station .....	2-15
B. 24 <sup>th</sup> Street Station .....	2-21
C. E Street (Bayfront) Station.....	2-27
D. H Street Station .....	2-36
E. Palomar Street and Industrial Street Station .....	2-45
F. Palm Avenue Trolley Station .....	2-51
G. Iris Avenue Station.....	2-55
H. Beyer Boulevard / Cottonwood Street Trolley Station .....	2-59
I. San Ysidro Intermodal Transportation Center Station .....	2-63

### Chapter 3: 540 Alignment

3.1 SUMMARY OVERVIEW AND CONCLUSIONS.....	3-1
A. 540 Alignment - San Ysidro Intermodal Transportation Center to Old Town San Diego .....	3-1
B. Alignment Station Types.....	3-2
C. Priority Treatment Conclusions.....	3-2
3.2 ALIGNMENT ANALYSIS .....	3-6
A. Traffic Congestion .....	3-6
B. Physical Constraints .....	3-7
C. Priority Measures .....	3-9
D. Engineering and Environmental Issues .....	3-18

## **Table of Contents (Continued)**

	<b><u>PAGE</u></b>
E. Feasibility of Priority Treatment Implementation.....	3-21
F. Conclusions.....	3-23
<b>3.3 STATION LOCATION AND TYPES.....</b>	<b>3-24</b>
A. 8 <sup>th</sup> Street Station.....	3-24
B. H Street Station.....	3-31
C. Iris Avenue Station.....	3-43
D. San Ysidro Intermodal Transportation Center Station .....	3-52
 <b>Chapter 4: 625 Alignment</b>	
<b>4.1 SUMMARY OVERVIEW AND CONCLUSIONS.....</b>	<b>4-1</b>
A. 625 Alignment - Imperial Beach to Otay Mesa Border Crossing via Palm Avenue and State Route 905 / Otay Mesa Road.....	4-1
B. Alignment Station Types.....	4-1
C. Priority Treatment Conclusions.....	4-1
<b>4.2 625 ALIGNMENT ANALYSIS .....</b>	<b>4-5</b>
A. Traffic Congestion .....	4-5
B. Physical Constraints .....	4-7
C. Priority Measures .....	4-9
D. Engineering and Environmental Issues .....	4-17
E. Feasibility of Priority Treatment Implementation.....	4-20
F. Conclusions.....	4-21
<b>4.3 STATION LOCATION AND TYPES.....</b>	<b>4-22</b>
A. Seacoast Drive and Evergreen Avenue Station.....	4-22
B. Palm Avenue and 7 <sup>th</sup> Street Station .....	4-28
C. Palm Avenue and Saturn Boulevard Station .....	4-33
D. Palm Avenue Trolley Station .....	4-39
E. Iris Avenue Trolley Station .....	4-44
F. Otay Mesa Road and Caliente Avenue Station .....	4-49
G. Otay Mesa Road and Cactus Road Station.....	4-54
H. Otay Mesa Road and La Media Road Station.....	4-59
I. Otay Mesa Road and Harvest Station.....	4-64
J. Otay Mesa Border Crossing Station .....	4-70
 <b>Chapter 5: 627 Alignment</b>	
<b>5.1 SUMMARY OVERVIEW AND CONCLUSIONS.....</b>	<b>5-1</b>
A. 627 Alignment - H Street Trolley Station to Eastern Urban Center Station .....	5-1
B. Alignment Station Types.....	5-1
C. Priority Treatment Conclusions.....	5-1
<b>5.2 627 ALIGNMENT ANALYSIS .....</b>	<b>5-5</b>
A. Traffic Congestion .....	5-5
B. Physical Constraints .....	5-6
C. Priority Measures .....	5-6
D. Engineering and Environmental Issues .....	5-6
E. Feasibility of Priority Treatment Implementation.....	5-7
F. Conclusions.....	5-7
<b>5.3 STATION LOCATION AND TYPES.....</b>	<b>5-9</b>

## Table of Contents (Continued)

	PAGE
A. Village 2 Station .....	5-9
B. Eastern Urban Center (EUC) Station .....	5-11
<b>Chapter 6: 694 Alignment</b>	
6.1 SUMMARY OVERVIEW AND CONCLUSIONS .....	6-1
A. 694 Alignment – Otay Mesa Border Crossing to Interstate 805 – Downtown San Diego Alignment Description .....	6-1
B. Alignment Station Types .....	6-1
C. Priority Treatment Conclusions .....	6-1
6.2 694 ALIGNMENT ANALYSIS .....	6-5
A. Traffic Congestion .....	6-5
B. Physical Constraints .....	6-6
C. Priority Treatments .....	6-8
D. Engineering and Environmental Issues .....	6-13
E. Feasibility of Priority Treatment Implementation .....	6-17
F. Conclusions .....	6-17
6.3 STATION LOCATION AND TYPES .....	6-18
A. Plaza Boulevard and I-805 Station .....	6-18
B. Plaza Bonita – State Route 54 and Interstate 805 Station .....	6-26
C. H Street Station at Interstate 805 (Terra Nova Station) .....	6-31
D. East Palomar Street and Medical Center Drive Station .....	6-37
E. Village 1 – Heritage Village Otay Ranch .....	6-45
F. Village 5 Station .....	6-46
G. Village 6 Station .....	6-47
H. Freeway Oriented Commercial (FOC) Station .....	6-48
I. Eastern Urban Center (EUC) Station .....	6-51
J. University or Village 9 Station .....	6-53
K. Lonestar Station .....	6-54
L. Otay Mesa Road – Harvest Station .....	6-58
M. Otay Mesa Border Crossing Station .....	6-65
<b>Chapter 7: RC-1 Alignment</b>	
7.1 SUMMARY OVERVIEW AND CONCLUSIONS .....	7-1
A. RC-1 Alignment – Palomar Street Trolley Station – Otay Ranch Eastern Urban Center – Eastlake Business Park .....	7-1
B. Alignment Station Types .....	7-1
C. Priority Treatment Conclusions .....	7-1
D. Land Use Conclusions .....	7-1
7.2 RC-1 ALIGNMENT ANALYSIS .....	7-5
A. Traffic Congestion .....	7-5
B. Physical Constraints .....	7-6
C. Priority Treatments .....	7-7
D. Engineering and Environmental Issues .....	7-10
E. Feasibility of Priority Treatments .....	7-13
F. Conclusions .....	7-13



## **Table of Contents (Continued)**

	<b><u>PAGE</u></b>
<b>7.3 STATION LOCATION AND TYPES.....</b>	<b>7-15</b>
A. Palomar Street Station .....	7-15
B. 4 <sup>th</sup> Avenue and Orange Avenue Station .....	7-20
C. Beyer Way and Main Street Station .....	7-25
D. Albany Avenue and Main Street Station .....	7-30
E. Interstate 805 and Main Street Station .....	7-35
F. Heritage Road and Main Street Station .....	7-40
G. Rock Mountain Road and La Media Road Station .....	7-41
H. University or Village (9) Station .....	7-42
I. Eastern Urban Center (EUC) Station .....	7-43
J. Freeway Oriented Commercial (FOC) or Village 11 Station .....	7-45
K. Eastlake Parkway Station .....	7-48
L. Eastlake Parkway and Clubhouse Drive .....	7-53
M. Village Center North Station .....	7-57
N. Eastlake Business Park .....	7-62

## **Appendix**

**A: METROPOLITAN TRANSIT DEVELOPMENT BOARD'S GRADE CROSSING POLICIES**

**B: SOUTHBAY SHOWCASE PROJECT: CENTRAL CHULA VISTA - OTAY RANCH (RED CAR ROUTE 627)**

# List of Figures and Tables



	<u>PAGE</u>
<b>Chapter 1: Introduction</b>	
Figure 1.1 Proposed Tier One Alignments.....	1-2
Figure 1.2 Proposed RTP Alignments .....	1-3
Table 1.1 Level of Service Classifications.....	1-5
Figure 1.3 Proposed Tier Two Alignments.....	1-6
Figure 1.4 Freeway Dual Platform Station.....	1-9
Figure 1.4A Freeway Single Station Platform .....	1-10
Figure 1.5 Off-Street or Transit Hub Station .....	1-11
Figure 1.6 Far-Side Curbside Station .....	1-12
Figure 1.7 Near-Side Curbside Station .....	1-13
Figure 1.8 Bulb-Out Curbside Station.....	1-14
Figure 1.9 Dual Station with Outside Platforms.....	1-15
Figure 1.10 Dual Station with Center Platform .....	1-16
Figure 1.11 Off-Set Station .....	1-17
Figure 1.12 Turn-Out Station.....	1-18
Figure 1.13 Intensifying Land Uses at Transit Station.....	1-20
Figure 1.14 Intensifying Land Uses at Transit Station.....	1-20
Figure 1.15 Pedestrian Refuge Island .....	1-21
Figure 1.16 Expanded Parkway.....	1-22
Figure 1.17 Pedestrian Bulb-Out .....	1-23
Figure 1.18 Pedestrian Connections from Cul-de-Sac.....	1-24
Figure 1.19 Pedestrian Scale Lighting.....	1-25
<b>Chapter 2: 510 Alignment</b>	
Figure 2.1 Alignment and Stations Map - 510 Alignment.....	2-2
Table 2-1 510 - Summary Table - Station Locations and Types.....	2-3
Figure 2.2 Priority Treatments Map - 510 Alignment .....	2-4
Figure 2.3 Physical Constraints Map - 510 Alignment .....	2-7
Figure 2.4 510 - 8 <sup>th</sup> Street Station Location.....	2-18
Figure 2.5 510 Alignment - 8 <sup>th</sup> Street Land Use .....	2-19
Figure 2.6 510 Alignment - 8 <sup>th</sup> Street Station Pedestrian Access .....	2-20
Figure 2.7 510 - 24 <sup>th</sup> Street Station Location .....	2-24
Figure 2.8 510 Alignment - 24 <sup>th</sup> Street Land Use.....	2-25
Figure 2.9 510 Alignment - 24 <sup>th</sup> Street Station Pedestrian Access.....	2-26
Figure 2.10 510 - E Street Station Location .....	2-32
Figure 2.10A 510 - E Street Station Platform South of Structure.....	2-33

## List of Figures and Tables (Continued)



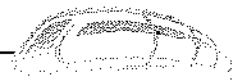
	<u>PAGE</u>
Figure 2.10B 510 – E Street Station Platform on Structure .....	2-33
Figure 2.11 510 Alignment – E Street Land Use.....	2-34
Figure 2.12 510 Alignment – E Street Station Pedestrian Access.....	2-35
Figure 2.13 510 – H Street Station Location .....	2-41
Figure 2.13A 510 – H Street Station Design .....	2-42
Figure 2.14 510 Alignment – H Street Land Use .....	2-43
Figure 2.15 510 Alignment – H Street Station Pedestrian Access .....	2-44
Figure 2.16 510 – Palomar Street Station Location .....	2-48
Figure 2.17 510 Alignment – Palomar Street Land Use.....	2-49
Figure 2.18 510 Alignment – Palomar Street Station Pedestrian Access.....	2-50
Figure 2.19 510 Alignment – Palm Avenue Trolley Land Use .....	2-53
Figure 2.20 510 Alignment – Palm Avenue Trolley Station Pedestrian Access .....	2-54
Figure 2.21 510 Alignment – Iris Avenue Trolley Land Use .....	2-57
Figure 2.22 510 Alignment – Iris Avenue Trolley Station Pedestrian Access .....	2-58
Figure 2.23 510 Alignment – Beyer Boulevard Trolley Land Use .....	2-61
Figure 2.24 510 Alignment – Beyer Boulevard Trolley Station Pedestrian Access.....	2-62
Figure 2.25 510 – San Ysidro Station Location.....	2-65
Figure 2.26 510 Alignment – San Ysidro Trolley Land Use .....	2-66
Figure 2.27 510 Alignment – San Ysidro Trolley Station Pedestrian Access .....	2-67
 <b>Chapter 3: 540 Alignment</b>	
Figure 3.1 Alignment and Stations Map – 540 Alignment .....	3-3
Table 3.1 540 Summary Table – Station Locations and Types .....	3-4
Figure 3.2 Priority Treatments Map – 540 Alignment .....	3-5
Table 3.2 540 – Alignment Congestion Levels .....	3-6
Figure 3.3 Physical Constraints Map – 540 Alignment .....	3-10
Figure 3.4A Typical HOV Lanes Requirements for Interstate 5.....	3-11
Figure 3.4 540 Alignment On-Grade Guideway on East Side of Harbor Drive.....	3-11
Figure 3.5 540 Alignment On-Grade Median Transit Lanes in Harbor Drive .....	3-12
Figure 3.6 540 Alignment Transition to HOV Lane on I-5.....	3-13
Figure 3.7 540 Alignment Transition from I-5 to SR-905.....	3-15
Figure 3.7A Elevated Guideway from I-5 HOV Lanes to SR-905 .....	3-15
Figure 3.8 540 Alignment Transition from SR-905 to I-805.....	3-16
Figure 3.9 540 Alignment Transition from I-805 to 510 Corridor.....	3-17
Figure 3.10 540 Alignment – 8 <sup>th</sup> Street Station Location .....	3-27

## ***List of Figures and Tables (Continued)***



	<b><u>PAGE</u></b>
Figure 3.10A 540 and the 510 Alignment – Combined 8 <sup>th</sup> Street Station Design .....	3-28
Figure 3.11 540 Alignment – 8 <sup>th</sup> Street Land Use .....	3-29
Figure 3.12 540 Alignment - 8 <sup>th</sup> Street Station Pedestrian Access.....	3-30
Figure 3.13 510 - H Street On-Grade Station .....	3-32
Figure 3.14 510 - H Street On-Grade Elevation .....	3-33
Figure 3.15 540 - H Street Above-Grade Station.....	3-35
Figure 3.16 540 - H Street Above-Grade Plan View .....	3-36
Figure 3.17 540 - H Street Above-Grade Elevation .....	3-37
Figure 3.18 540 Alignment - H Street Land Use.....	3-41
Figure 3.19 540 Alignment – H Street Station Pedestrian Access .....	3-42
Figure 3.20 540 – Iris Avenue Station Alternative “A” Location.....	3-47
Figure 3.21 540 – Iris Avenue Station Alternative “B” Location.....	3-48
Figure 3.22 540 – Iris Avenue Station Alternative “C” Location.....	3-49
Figure 3.23 540 Alignment - Iris Avenue Trolley Land Use.....	3-50
Figure 3.24 540 Alignment - Iris Avenue Trolley Station Pedestrian Access.....	3-51
Figure 3.25 540 – San Ysidro Station Location.....	3-55
Figure 3.26 540 Alignment - San Ysidro Station Land Use .....	3-56
Figure 3.27 540 Alignment – San Ysidro Station Pedestrian Access.....	3-57
 <b>Chapter 4: 625 Alignment</b>	
Figure 4.1 Alignment and Stations Map – 625 Alignment .....	4-2
Figure 4.2 Priority Treatments Map – 625 Alignment .....	4-3
Table 4.1 625 Summary Table– Station Locations and Types.....	4-4
Table 4.2 625– Alignment Congestion Tables.....	4-6
Figure 4.3 Physical Constraints Map – 625 Alignment .....	4-8
Figure 4.4 Palm Avenue Existing Condition .....	4-10
Figure 4.5 Palm Avenue Curbside Transit Lanes .....	4-10
Figure 4.6 Palm Avenue Median Transit Lanes.....	4-10
Figure 4.7 Seacoast Drive Single Curbside Transit Lane .....	4-11
Figure 4.8 625 Return Route to Palm Avenue .....	4-12
Figure 4.9 Drop Ramp to Access I-5 HOV Lanes .....	4-13
Figure 4.10 Access to SR-905 from the I-5 HOV Lanes.....	4-14
Figure 4.10A Elevated Guideway from I-5 HOV Lanes to SR-905 .....	4-14
Figure 4.11 Median Transit Lanes in SR-905 from Beyer Boulevard to Caliente Avenue ....	4-15

## **List of Figures and Tables (Continued)**



	<b><u>PAGE</u></b>
Figure 4.12 Otay Mesa Road Cross Section .....	4-16
Figure 4.13 625 – Seacoast Drive and Evergreen Avenue Station Location.....	4-25
Figure 4.14 625 Alignment – Seacoast Drive and Evergreen Avenue Land Use .....	4-26
Figure 4.15 625 Alignment – Seacoast Drive and Evergreen Avenue Station Pedestrian Access .....	4-27
Figure 4.16 625 - Palm Avenue and 7 <sup>th</sup> Street Location.....	4-30
Figure 4.17 625 Alignment - Palm Avenue and 7 <sup>th</sup> Street Land Use .....	4-31
Figure 4.18 625 Alignment - Palm Avenue and 7 <sup>th</sup> Street Station Pedestrian Access .....	4-32
Figure 4.19 625 -Palm Avenue and Saturn Boulevard Station Location.....	4-36
Figure 4.20 625 – Palm Avenue and Saturn Boulevard Cross Section .....	4-36
Figure 4.21 625 Alignment - Palm Avenue and Saturn Boulevard Land Use.....	4-37
Figure 4.22 625 Alignment-Palm Avenue and Saturn Boulevard Station Pedestrian Access.....	4-38
Figure 4.23 625 – Palm Avenue Station Location.....	4-41
Figure 4.24 625 Alignment – Palm Avenue Trolley Land Use .....	4-42
Figure 4.25 625 Alignment - Palm Avenue Trolley Station Pedestrian Access.....	4-43
Figure 4.26 625 - Iris Avenue Station Location .....	4-46
Figure 4.27 625 Alignment - Iris Avenue Trolley Land Use.....	4-47
Figure 4.28 625 Alignment – Iris Avenue Trolley Station Pedestrian Access .....	4-48
Figure 4.29 625 - Otay Mesa Road and Caliente Avenue Station Location.....	4-51
Figure 4.30 625 Alignment – Otay Mesa Road and Caliente Avenue Land Use.....	4-52
Figure 4.31 625 Alignment-Otay Mesa Road and Caliente Avenue Station Pedestrian Access.....	4-53
Figure 4.32 Otay Mesa Road and Cactus Road Station Location.....	4-56
Figure 4.33 625 Alignment - Otay Mesa Road and Cactus Road Land Use.....	4-57
Figure 4.34 625 Alignment–Otay Mesa Road and Cactus Avenue Station Pedestrian Access.....	4-58
Figure 4.35 Otay Mesa Road and La Media Road Station Location .....	4-61
Figure 4.36 625 Alignment – Otay Mesa Road and La Media Land Use .....	4-62
Figure 4.37 625 Alignment – Otay Mesa Road and La Media Station Pedestrian Access ..	4-63
Figure 4.38 Otay Mesa Road - Harvest Station Location .....	4-66
Figure 4.39 Otay Mesa Road - Harvest Station Type .....	4-67
Figure 4.40 625 Alignment – Otay Mesa Road and Harvest Land Use .....	4-68
Figure 4.41 625 Alignment - Otay Mesa Road –Harvest Road Station Pedestrian Access .	4-69
Figure 4.42 Otay Mesa Border Crossing Station Location .....	4-72

## List of Figures and Tables (Continued)

	<u>PAGE</u>
Figure 4.43 625 Alignment - Otay Mesa Border Crossing Land Use .....	4-73
Figure 4.44 625 Alignment - Otay Mesa Border Crossing Station Pedestrian Access .....	4-74
 <b>Chapter 5: 627 Alignment</b>	
Table 5.1 627 Summary Table - Station Locations and Types .....	5-2
Figure 5.1 Alignment and Stations Map - 627 Alignment .....	5-3
Figure 5.2 Priority Treatments Map - 627 Alignment .....	5-4
Table 5.2 540 Alignment Congestion Levels.....	5-5
Figure 5.3 Physical Constraints Map - 627 Alignment .....	5-8
Figure 5.4 Village 2 Station Location .....	5-9
 <b>Chapter 6: 694 Alignment</b>	
Figure 6.1 Alignment and Stations Map - 694 Alignment .....	6-2
Figure 6.2 Priority Treatments Map - 694 Alignment .....	6-3
Table 6.1 694 Summary Table - Station Locations and Types .....	6-4
Table 6.2 694 Alignment - Congestion Levels .....	6-5
Figure 6.3 Physical Constraints Map - 694 Alignment .....	6-7
Figure 6.4 Dedicated Median Transit Lanes in Otay Ranch .....	6-9
Figure 6.5 Drop Ramp for East Palomar Street .....	6-9
Figure 6.6 Plaza Bonita Preferred Station Access .....	6-10
Figure 6.7 Plaza Bonita Station Alternative A Access .....	6-11
Figure 6.8 Plaza Bonita Station Alternative B Access .....	6-12
Figure 6.9 Plaza Boulevard Station Preferred Location .....	6-21
Figure 6.10 Plaza Boulevard Station Alternative A Location .....	6-22
Figure 6.10A Plaza Boulevard Station Alternative B Location .....	6-23
Figure 6.11 694 Alignment - Plaza Boulevard and Interstate 805 Land Use .....	6-24
Figure 6.12 694 Alignment - Plaza Boulevard and Interstate 805 Station Pedestrian Access .....	6-25
Figure 6.13 Plaza Bonita Station Location .....	6-28
Figure 6.14 694 Alignment - Plaza Bonita - State Route 54 and Interstate 805 Land Use	6-29
Figure 6.15 694 Alignment - Plaza Bonita - State Route 54 and Interstate 805 Station Pedestrian Access .....	6-30
Figure 6.16 H Street and Interstate 805 Station Location .....	6-34
Figure 6.17 694 Alignment - H Street and Interstate 805 (Terra Nova) Land Use .....	6-35

## List of Figures and Tables (Continued)



	<u>PAGE</u>
Figure 6.18 694 Alignment – H Street and Interstate 805 (Terra Nova) Station Pedestrian Access.....	6-36
Figure 6.19A East Palomar Street / Raven Avenue Station Location .....	6-40
Figure 6.19B East Palomar Street / Oleander Avenue Station Location .....	6-41
Figure 6.19C East Palomar Street / Medical Center Drive Station Location .....	6-42
Figure 6.20 694 Alignment - East Palomar Street and Medical Center Drive Land Use.....	6-43
Figure 6.21 694 Alignment - East Palomar Street and Medical Center Drive Station Pedestrian Access.....	6-44
Figure 6.22 Freeway Oriented Commercial Station Location .....	6-50
Figure 6.23 Lonestar Station Land Use.....	6-56
Figure 6.24 Lonestar Station Type.....	6-57
Figure 6.25 Harvest Station Location.....	6-61
Figure 6.26 Harvest Station Type.....	6-62
Figure 6.27 694 Alignment – Otay Mesa Road and Harvest Land Use .....	6-63
Figure 6.28 694 Alignment – Otay Mesa Road and Harvest Station Pedestrian Access.....	6-64
Figure 6.29 Otay Mesa Border Crossing Station Location .....	6-67
Figure 6.30 694 Alignment – Otay Mesa Border Crossing Station Land Use.....	6-68
Figure 6.31 694 Alignment – Otay Mesa Border Crossing Station Pedestrian Access.....	6-69

### **Chapter 7: RC-1 Alignment**

Figure 7.1 Alignment and Stations Map – RC-1 Alignment .....	7-2
Table 7.1 RC-1 Summary Table – Station Locations and Types.....	7-3
Figure 7.2 Priority Treatments Map – RC-1 Alignment.....	7-4
Table 7.2 RC-1 Alignment – Congestion Levels.....	7-6
Figure 7.3 Physical Constraints Map – RC-1 Alignment .....	7-8
Figure 7.4 Main Street East of Interstate 805 – Existing and Proposed.....	7-14
Figure 7.4A Typical Dedicated Transit Lanes within Otay Ranch.....	7-14
Figure 7.5 RC-1 Alignment - Palomar Street Land Use.....	7-18
Figure 7.6 RC-1 Alignment – Palomar and Industrial Street Station Pedestrian Access...	7-19
Figure 7.7 4 <sup>th</sup> Avenue and Orange Avenue Station Location .....	7-22
Figure 7.8 RC-1 Alignment – 4 <sup>th</sup> Avenue and Orange Avenue Land Use .....	7-23
Figure 7.9 RC-1 Alignment – 4 <sup>th</sup> Avenue and Orange Avenue Station Pedestrian Access	7-24

## ***List of Figures and Tables (Continued)***



	<b><u>PAGE</u></b>
Figure 7.10 Beyer Way and Main Street Station Location.....	7-27
Figure 7.11 RC-1 Alignment – Beyer Way and Main Street Land Use.....	7-28
Figure 7.12 RC-1 Alignment – Beyer Way and Main Street Pedestrian Access.....	7-29
Figure 7.13 Albany Avenue and Main Street Station Location .....	7-32
Figure 7.14 RC-1 Alignment – Albany Avenue and Main Street Land Use.....	7-33
Figure 7.15 RC-1 Alignment – Albany Avenue and Main Street Pedestrian Access .....	7-34
Figure 7.16 Interstate 805 and Main Street Station Location .....	7-37
Figure 7.17 Interstate 805 and Main Street Land Use.....	7-38
Figure 7.18 Interstate 805 and Main Street Station Pedestrian Access.....	7-39
Figure 7.19 Freeway Oriented Commercial Station Location .....	7-47
Figure 7.20 Eastlake Parkway Station Location.....	7-50
Figure 7.21 RC-1 Alignment – Eastlake Parkway Land Use.....	7-51
Figure 7.22 RC-1 Alignment – Eastlake Parkway Station Pedestrian Access.....	7-52
Figure 7.23 Eastlake Parkway and Clubhouse Drive Station Location.....	7-54
Figure 7.24 RC-1 Alignment – Eastlake Parkway and Clubhouse Drive Land Use .....	7-55
Figure 7.25 RC-1 Alignment – Eastlake Parkway and Clubhouse Drive Station Pedestrian Access.....	7-56
Figure 7.26 Village Center North Station Location.....	7-59
Figure 7.27 RC-1 Alignment – Village Center North Land Use.....	7-60
Figure 7.28 RC-1 Alignment – Village Center North Station Pedestrian Access.....	7-61
Figure 7.29 RC-1 Alignment – Eastlake Business Park Land Use.....	7-64
Figure 7.30 RC-1 Alignment – Eastlake Business Park Station Pedestrian Access.....	7-65



## Chapter 1 – Introduction

### 1.1 PURPOSE

The purpose of this Technical Memorandum is to build upon the three studies outlined in the previously submitted memorandums: the Analysis of Travel Patterns, the Universe of Alignment Services, and the Universe of Alignment Services Ridership Analysis. Through these previous studies the 26 alignments and alternatives outlined in the Universal of Alignment Services Memorandum were narrowed down and divided into two categories: Tier One Alignments and Tier Two Alignments.

#### A. Tier One Alignments

Tier One alignments, shown in **Figure 1.1**, include alignments identified as having the strongest ridership potential and that best served the travel patterns established for the South Bay region. These alignments have the best possibility for future implementation and funding opportunities in the San Diego Association of Government's (SANDAG) Regional Transportation Plan (RTP). Selected Tier One alignments include:

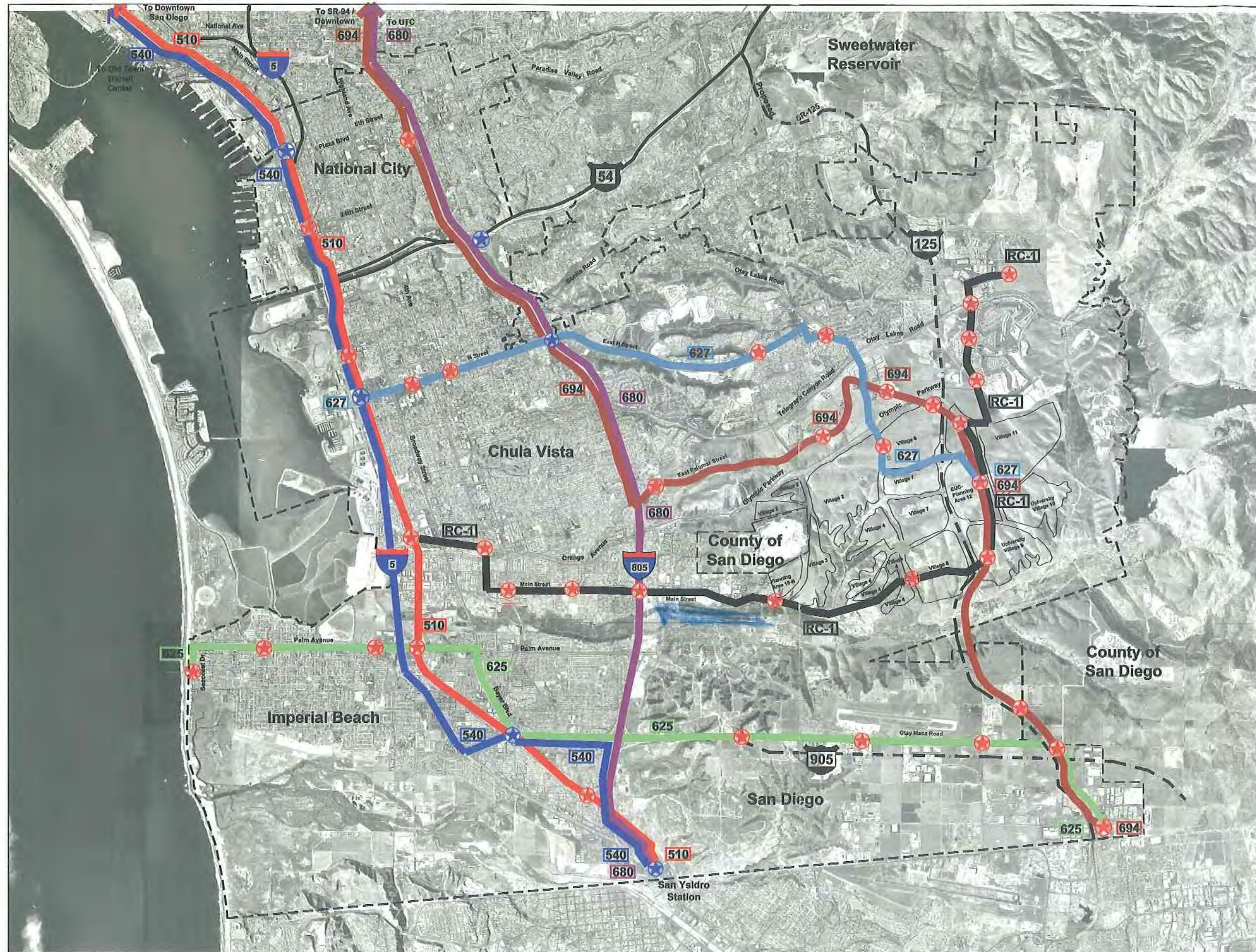
- YC 540: Old Town San Diego to San Ysidro Intermodal Transportation Center
- YC 680: Sorrento Mesa to San Ysidro Intermodal Transportation Center
- RC 510\*: Downtown San Diego to San Ysidro Intermodal Transportation Center
- RC 625: Imperial Beach to Olay Mesa Intermodal Transportation Center
- RC 627\*: H Street Trolley Station to Olay Ranch Eastern Urban Center
- RC 694\*: Downtown San Diego to Olay Mesa Intermodal Transportation Center
- RC 1: Palomar Street Trolley Station to Olay Ranch to Eastlake Business Park

\* These alignments are currently included in SANDAG's RTP and are illustrated in **Figure 1.2**.

One of these alignments, the RC 694, is considered a strong candidate alignment and has been identified as an "Early Action" projects by the Metropolitan Transit Development Board (MTDB). Another, the RC 627 was studied in an earlier effort as the "South Bay Showcase Project" and is included in the Appendix. Only a small portion of the 627 alignment, not included in the "Showcase Project" is included in this report. The YC 680 is also considered a strong candidate alignment and has been identified as "Early Action" project. The other selected Tier One alignments are further analyzed in this report to:

- Define where congestion levels exist on the proposed routes.
- Provide transit priority measures where congestion areas occur.
- Review station locations and establish the station needs and requirements.
- Review existing and proposed land uses at station locations and provide potential land use opportunities that are transit supportive.
- Establish opportunities for pedestrian access from surrounding neighborhoods to the proposed station locations.





## Alignment and Stations

MTDB - South Bay Transit  
First Project

### PROPOSED TIER ONE ALIGNMENTS

#### LEGEND

- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

#### Proposed Tier One Alignments

##### Red Car

- 510
- 625
- 627
- 694
- RC1

##### Yellow Car

- 540
- 680

0 1/2 1 mile



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**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 1.1**

**PROPOSED TIER ONE ALIGNMENTS**





## Alignment and Stations

MTDB - South Bay Transit  
First Project

### PROPOSED RTP ALIGNMENTS

#### LEGEND

- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

#### Proposed RTP Alignments

- Red Car
- 510
- 627
- 694
- Yellow Car
- 680

0 1/2 1 mile



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ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
658-279-3776

## FIGURE 1.2

### PROPOSED RTP ALIGNMENTS



## **B. Tier Two Alignments**

Tier Two alignments, shown in **Figure 1.3**, are alignments that have the feasibility to provide additional Red Car and Yellow Car service to the study area but the ridership and travel patterns are not as strong as those defined in Tier One. Although these alignments have merit they will be set aside at this time and reviewed in the future.

The following briefly outlines the issues discussed in this report and the method for the studies recommendations and conclusions.

### **1.2 CONGESTION LEVELS**

This study reviews the level of congestion (traffic volume) for each of the proposed alignment corridors. The level of congestion will be used to determine the type of transit priority measures needed to maintain the high level of transit service. The congestion levels were reviewed for two time periods: the interim near term year of 2010 and the long term year of 2020.

The traffic volumes for these two time periods were obtained from SANDAG's Regional Transportation Model. The model volumes were based on the 2020 RTP and the 2020 Cities/County Forecast. Projected future traffic volume data was provided in average daily traffic (ADT) format. Levels of service (LOS) for transit route roadways were determined based on LOS guidelines published by the City of San Diego as shown in **Table 1.1**. These guidelines designate an LOS based on future ADT's and roadway classifications.

Although the LOS based on daily traffic levels did not indicate operations specifically within commuter peak hours, the roadway LOS was used to recommend particular priority treatments for specific segments of each transit route. For purposes of this report the LOS was separated into two areas:

- **Mixed-Flow Operations**

Mixed-Flow operations are recommended for a segment when the daily LOS is projected within the range of LOS A through D or as determined necessary by the appropriate local agency.

- **Transit Priority Treatments**

Other specific forms of transit priority treatments are recommended where daily LOS is projected at LOS E or F and or where determined necessary by the appropriate local agency or jurisdiction.

It should also be noted that generally for all alignments, transit priority signal modification measures are recommended at major intersections. Since intersections typically act as bottleneck points for traffic during peak commuter hours a central Transit First concept involves giving priority to transit vehicles at arterial intersections with traffic signals. The transit systems integrated with transit signal priority technologies will provide a smoother, faster trip for transit customers.

Street Classification	Lanes	Cross Sections* (Approx.)	Level of Service with ADT **				
			A	B	C	D	E
Expressway	6 Lanes	102-160/122-200	30,000	42,000	60,000	70,000	80,000
Prime Arterial	6 Lanes	102-108/122-128	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 Lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 Lanes	78-82/96-102	15,000	21,000	30,000	35,000	40,000
Secondary Arterial/ Collector	4 Lanes	64-72/64-92	10,000	14,000	20,000	25,000	30,000
Secondary Arterial/ Collector	4 Lanes	64-72/64-92	10,000	14,000	20,000	25,000	30,000
Collector (No Center lane) (Continuous left-turn lane)	4 Lanes 2 Lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (No Fronting property)	2 Lanes	40/80	4,000	5,500	7,500	9,000	10,000
Collector (Commercial-Industrial fronting)	2 Lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (Multi-family)	2 Lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (Single family)	2 Lanes	36/56	---	---	2,200	---	---

Legend:

\* Curb to curb width (feet)/right of way (feet): based upon the City of San Diego Street Design Manual and other jurisdictions within the San Diego region.

\*\*Approximate recommended ADT based upon the City of San Diego Street Design Manual.

Notes:

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.
2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

**Table 1.1:**  
**Level of Service (LOS) Classifications**





## Alignment and Stations

MTDB - South Bay Transit  
First Project

### LEGEND

- Alignment
- - - - - Project Boundary
- - - - - Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

0 1/2 1 mile



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**Wilbur Smith Associates**  
9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 1.3**  
**PROPOSED TIER TWO ALIGNMENT**



### 1.3 PRIORITY TREATMENTS

Numerous priority treatments have been recommended based on the congestion levels noted for each alignment's corridor. These treatments are separated into both near term and long term treatments to maintain a high level of transit service. Depending on the congestion levels the priority treatments could include:

- **Mixed-Flow Transit Lanes**

Mix-flow transit lanes are recommended for areas where traffic congestion is low. These lanes operate within existing travel lanes and traffic.

- **Dedicated Transit Lanes**

Dedicated transit lanes are recommended where traffic congestion is high. Dedicated transit lanes are used to provide transit vehicle priority by minimizing conflicts with other vehicles and travel lanes. Dedicated transit lanes will be implemented as curbside lanes or median lanes as feasible.

#### **Curbside Running Lanes**

Curbside running transit lanes are surface street traffic lanes reserved for the exclusive use of transit vehicles. Curbside running transit lanes are typically 12-feet in width and require the least modification to existing street geometry. They conserve width by allowing transit stops to be shared with existing sidewalks. Curbside running transit lanes are typically shared with right-turning vehicles to conserve additional width within existing right-of-way.

However, curbside running transit lanes are also the most difficult lanes to keep free of obstructions, such as illegal parking and right-turning vehicles yielding to pedestrians. As a result, they tend to provide less priority to buses than median lanes.

#### **Median Running Lanes**

Median running transit lanes are separated from general traffic lanes by a raised curb or even "botts-dots." The minimum width for median running transit lanes is 24-feet. Passenger platforms are usually located on the right and can be staggered to reduce the overall width needed. Center platforms can also be used, but this requires left-side doors on all vehicles using the median lanes.

Median running transit lanes are less likely to be congested by other traffic than curbside running transit lanes. With traffic conflicts only at intersections, median transit provides significant operational performance. On the other hand, a few disadvantages exist. Median running transit lanes require passenger loading areas in the center of the street necessitating an increase in the cross section street width. Central stations also require passengers to cross traffic lanes to reach the sidewalk, which may create safety problems.

In addition, left-turning traffic conflicts with through moving transit vehicles. Either left turns must be banned or they must be permitted only in a separate signal phase.

- **Freeway HOV/Transit Lanes**

HOV systems are being proposed on freeways that are designated for many of the alignment corridors. It is proposed that the Red and Yellow Car transit vehicles use the HOV lanes to avoid peak period congestion areas on freeways. The HOV lanes will be implemented in many different design alternatives depending on the corridor. The lanes may be bi-directional, single-direction (contraflow), or reversible facilities. HOV lanes can be physically separated from other lanes or they can be separated with paint and signage.

It is desirable to locate HOV facilities on the median (inside) lanes of the highway to avoid conflicts with ramp movements and weaving traffic.

Transit operation on the freeway shoulder is another possible alternative, but not the most desirable. This is due to the need to maintain a clear zone for disabled vehicles and a safety buffer between traffic and the edge of pavement. The ability to use shoulder lanes is a decision that will be determined by Caltrans.

- **Guideways**

One of the highest levels of priority treatment is separate running ways that are known as dedicated guideways. Guideways are fully grade-separated facilities where only transit vehicles are permitted to travel. This type of facility is also used to make up grade changes or where vertical separation is required.

Restriction of traffic to only authorized transit vehicles allows for the guideway to be designed with a narrower cross section than a standard traffic lane, if automatic guidance mechanisms are used on the vehicles.

Some dedicated guideways have raised vertical curbs on both sides of the lane against which small guide wheels on the bus "track" the vehicle. Using this simple mechanical guidance system, bus lane width can be reduced to 9 feet or less from the standard 11 feet and precision docking at BRT stations can be achieved. However, for the purposes of this report Guideways will be a maximum of 36-feet wide. The transit lanes will be 12-feet wide with 6-feet of shoulder on both sides.

- **Queue Jumpers**

Queue jumpers are separate transit lanes used at intersections. For safe transit operations the queue jumper lanes typically are 11 to 12 feet in width. The length of the queue jumper lane is dependent on the intersection congestion and the length of the adjacent queuing cars. The queue jumper lane allows the transit vehicle to move ahead of cars waiting at traffic signals thereby by-passing congested areas and reaching the transit stations sooner.

- **Transit Priority Signals**

Transit priority signals provide preferential treatment for transit vehicles at traffic signals and can be accomplished in several ways. The simplest strategy is to set basic timing for intersection approaches to favor approaches used by transit vehicles. Another strategy is to provide initial "signal preference" for transit vehicles stopped at the intersection. This method works in conjunction with queue jumping and dedicated transit lanes. It is anticipated that Transit Priority Signals will be utilized within all alignment corridors.



## 1.4 STATION LOCATION AND TYPES

The study area can use a variety of stations depending on the surrounding community, transit ridership, and operational requirements and characteristics. Major stations may include parking facilities and support transfers to other transportation services (Blue car or Green Car service). In less dense areas, minor station improvements may be all that is necessary.

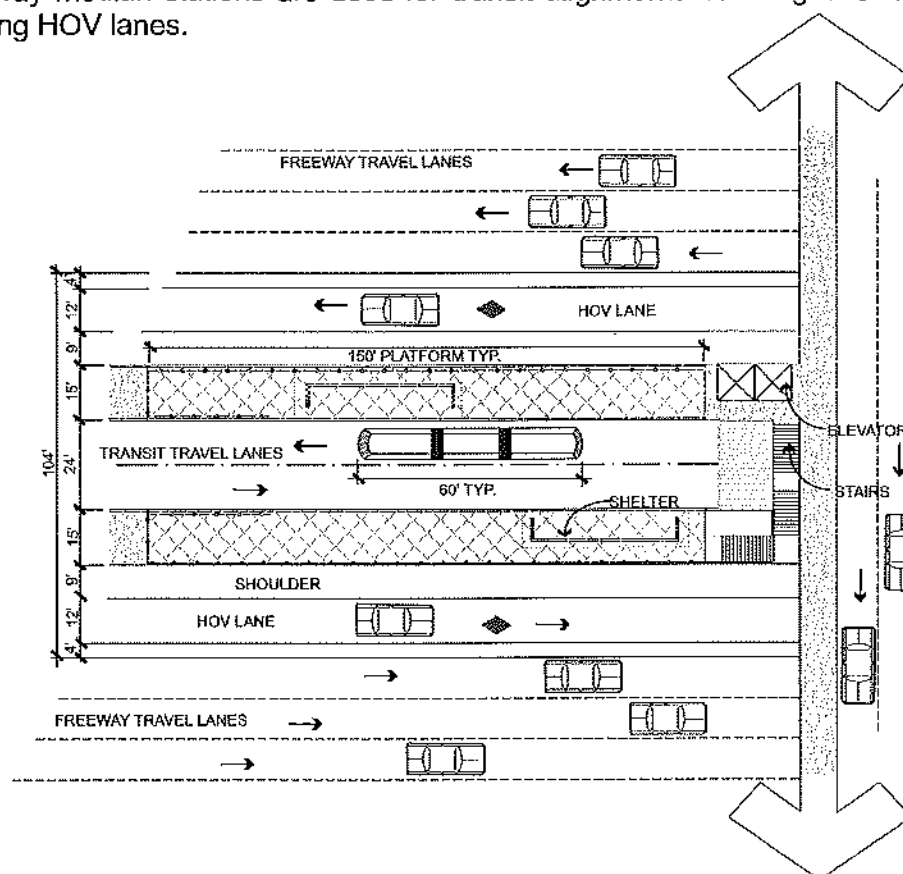
A key objective of this report is to continue to confirm and establish the station locations that will serve the proposed Tier One alignments. This report also provides the general spatial needs for each type of station. Each station location was reviewed in the field for existing conditions to determine station types and requirements. The recommended location and type of station included considerations for passenger needs, safety, efficient transit and traffic operations, and interfacing with local land uses.

### A. Station Requirements

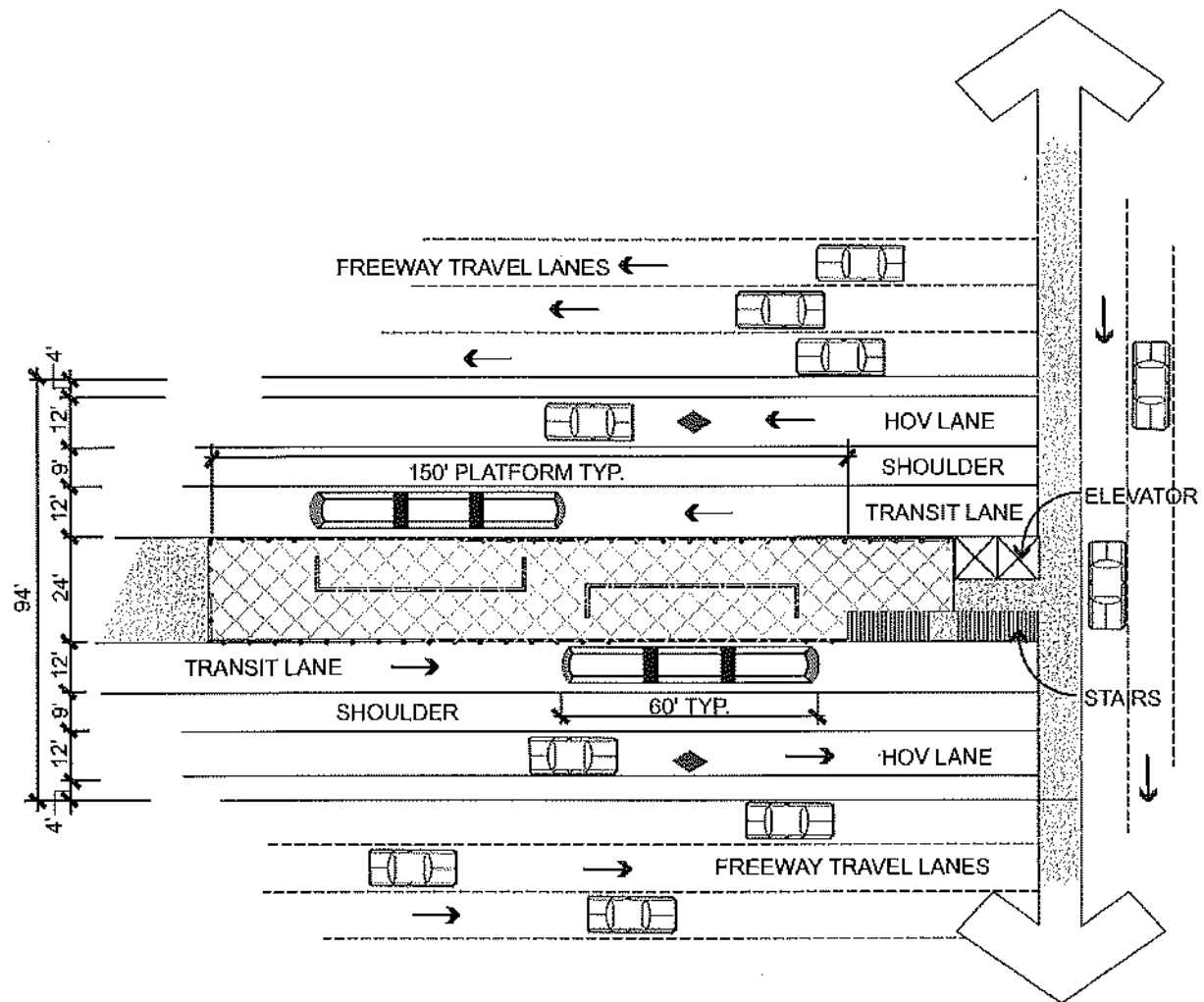
Five (5) station types were used to satisfy different requirements based on the type of service that the alignments are providing. The stations include the following types:

- **Freeway Median Station (Figure 1.4 and 1.4A)**

Freeway median stations are used for transit alignments traveling freeway corridors utilizing HOV lanes.



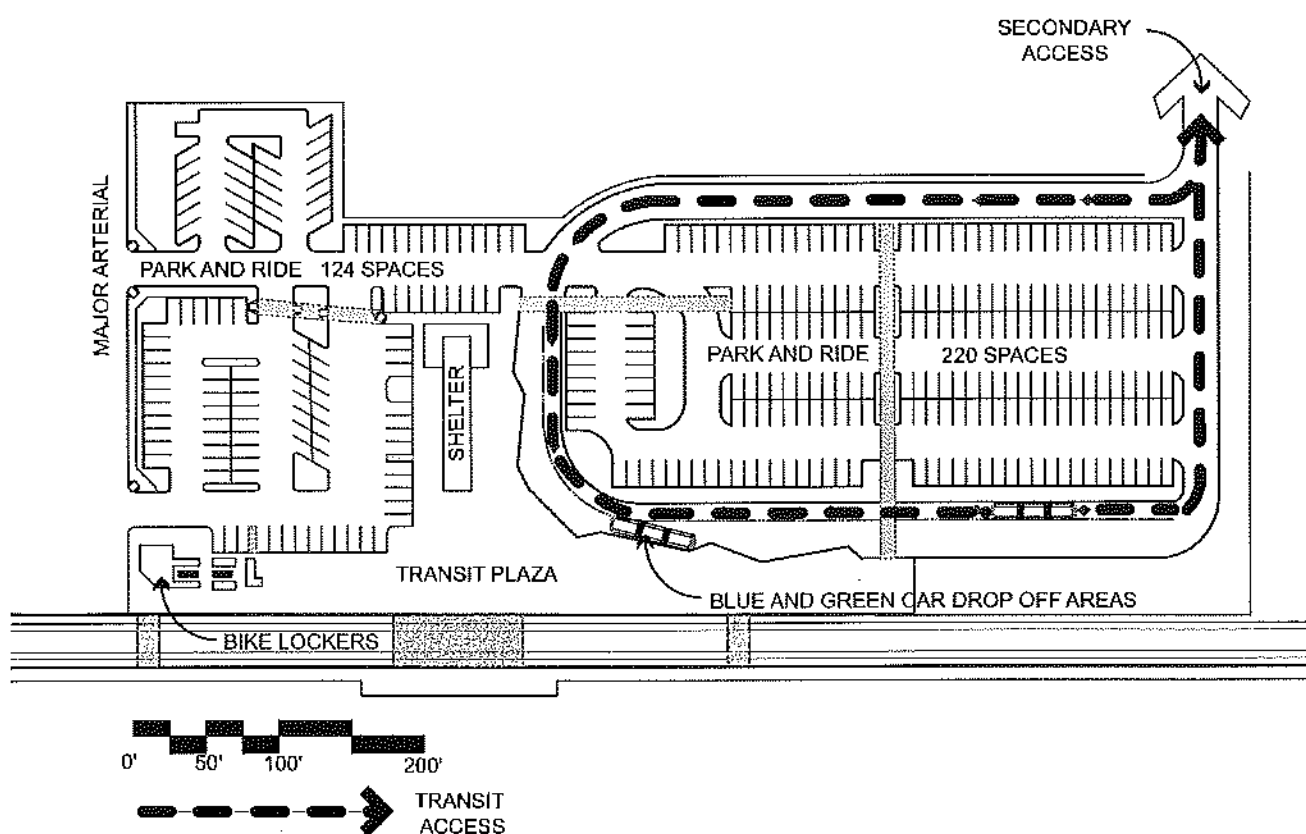
**Figure 1.4:**  
Freeway Dual Platform Station



**Figure 1.4 A:**  
Freeway Single Station Platform

▪ **Off-Street Station and/or Transit Hub (Figure 1.5)**

The off-street stations serve numerous transit alignments including Yellow, Red, Blue, and Green Car services. This type of station typically includes a "park and ride" facility. In areas where provision for parking is difficult due to highly urbanized sites or high land cost, providing a parking structure may be the most efficient and cost effective solution.



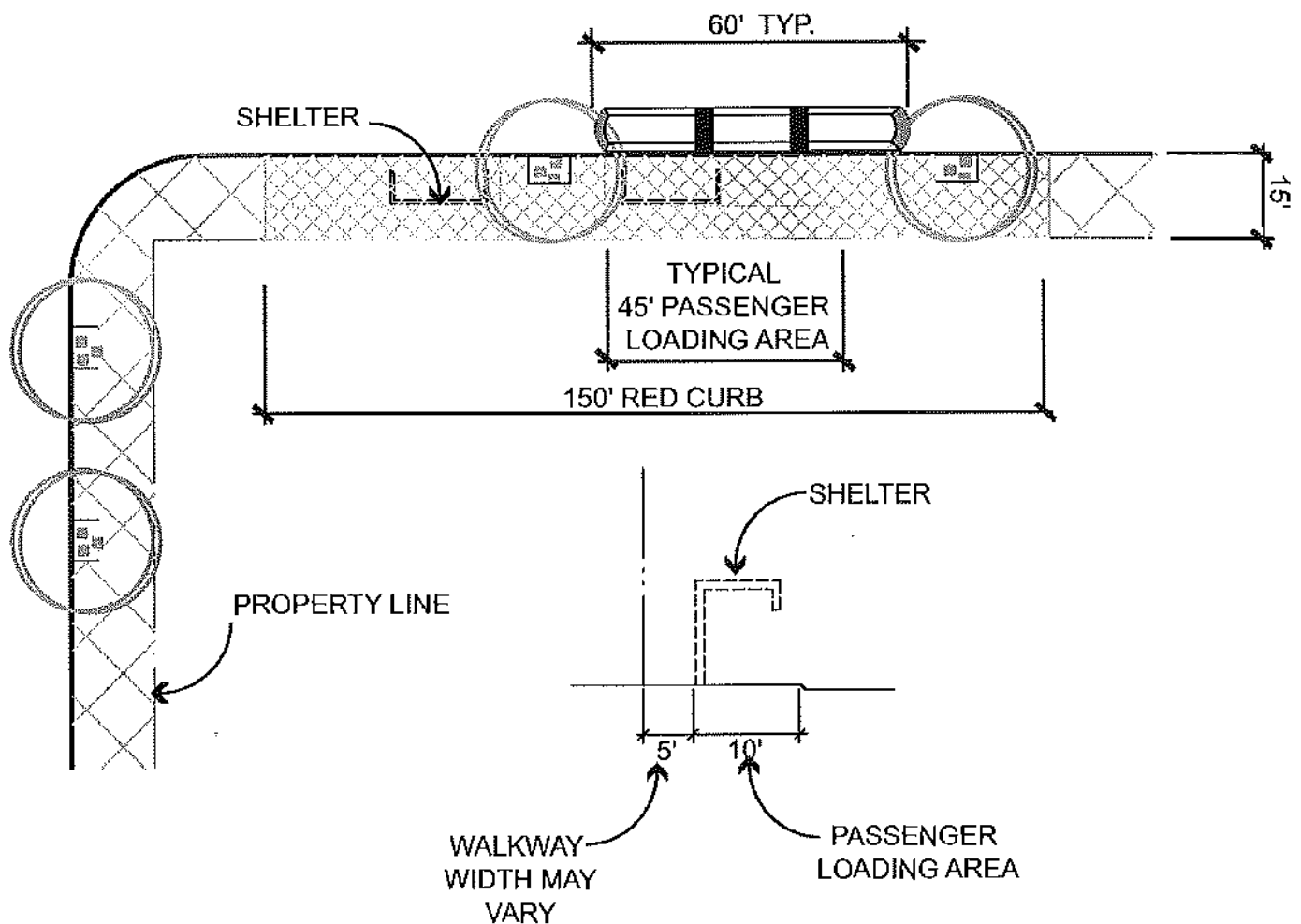
**Figure 1.5:**  
Off-Street or Transit Hub Station

▪ **Curbside Station**

Curbside stations would serve primarily Red Car service running in curbside lanes on major arterials. Three (3) types of curbside station will be used in the study area including:

***Far-Side Station (Figure 1.6)***

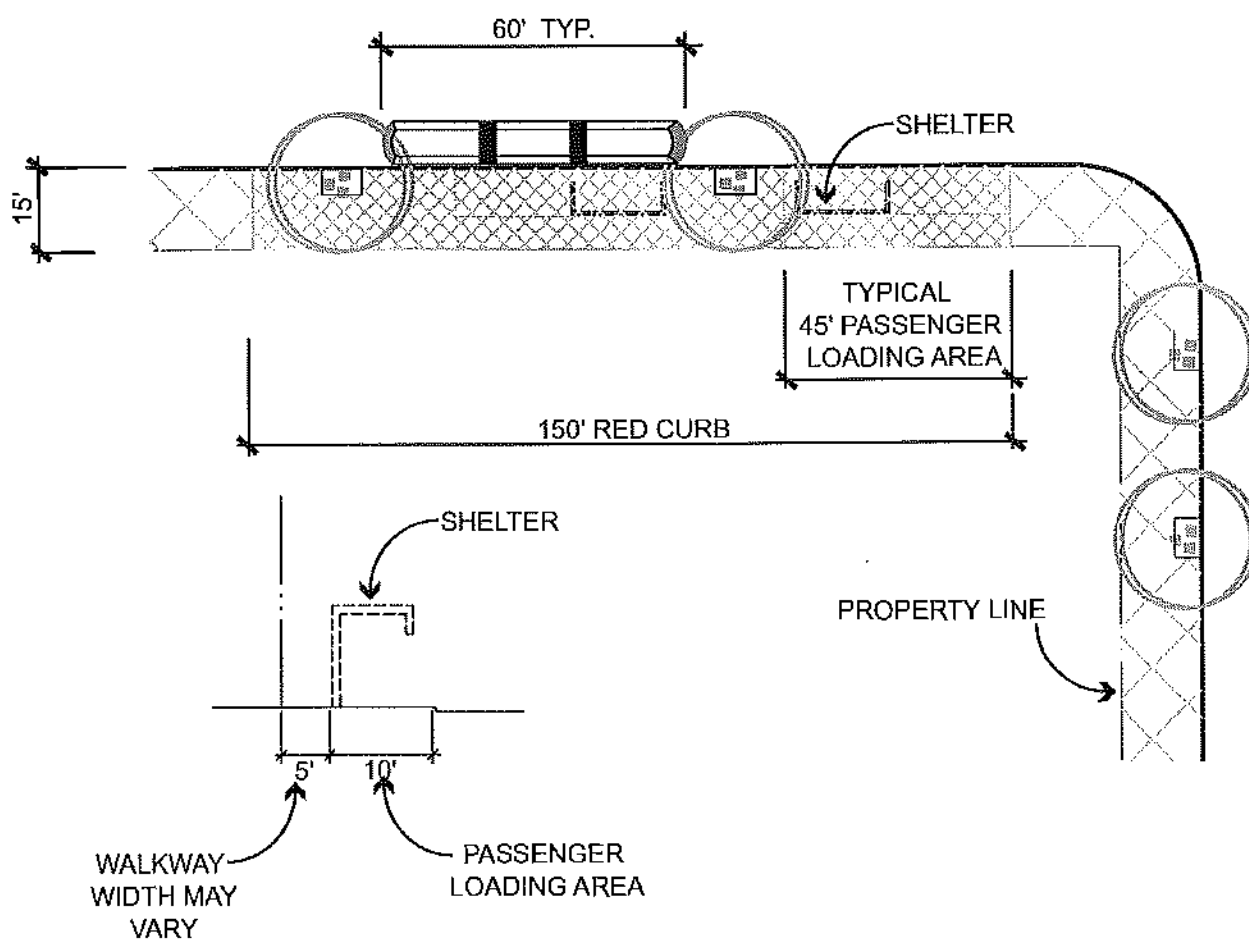
A far-side station is located on the far-side of an intersection and is viewed as the preferred station from transit operational and traffic perspectives.



**Figure 1.6:**  
**Far-Side Curbside Station**

**Near-Side Station (Figure 1.7)**

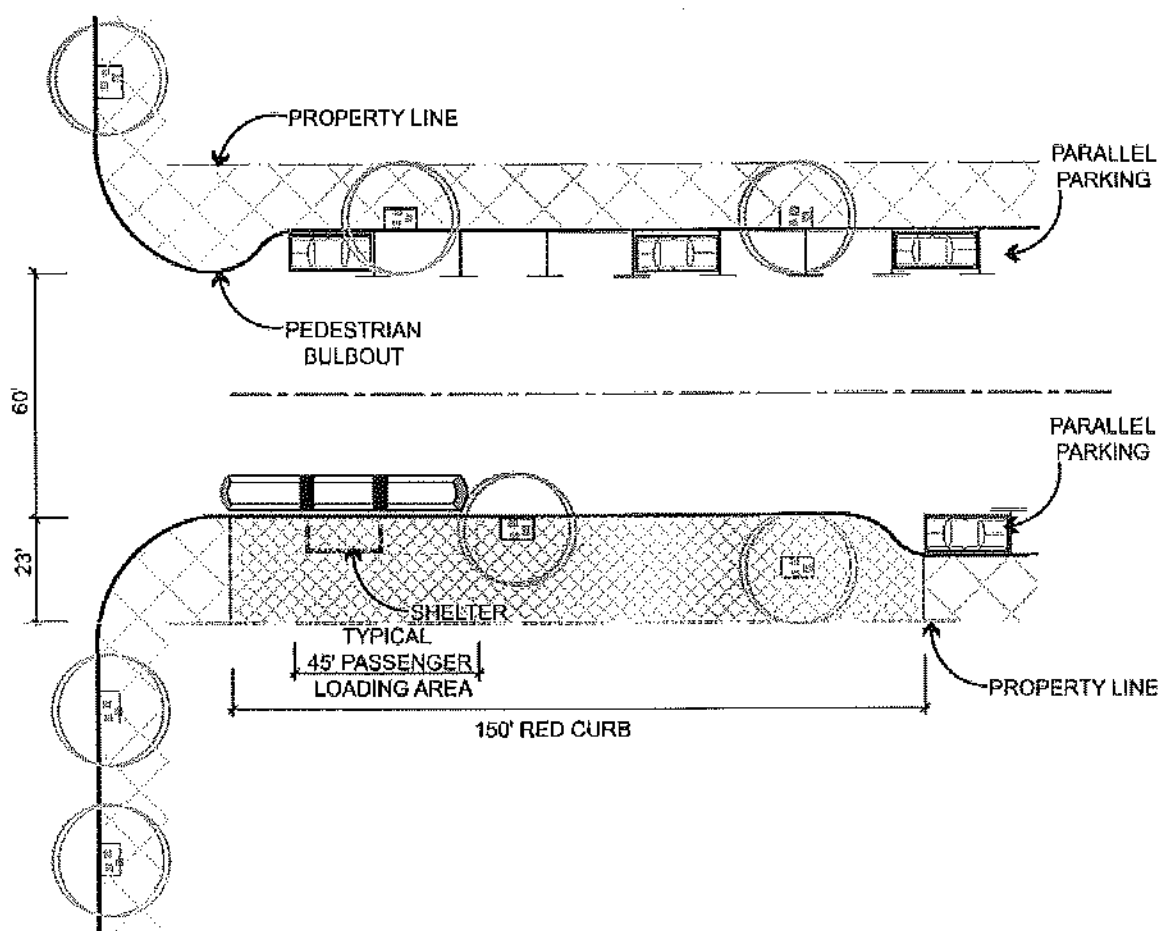
A near-side serving station is located prior to an intersection and is typically not a preferred location. Service operation and reliability improves when this type of station is used with a transit priority traffic signal.



**Figure 1.7:**  
Near-Side Curbside Station

**Bulb-Out Station (Figure 1.8)**

A bulb-out station allows for better pedestrian access to transit vehicles along corridors providing on-street parking. The "bulb-out" sidewalk narrows the street at intersection by widening the sidewalk at the point of crossing. This shortens the intersection crossing for pedestrians providing a safer condition for transit riders.



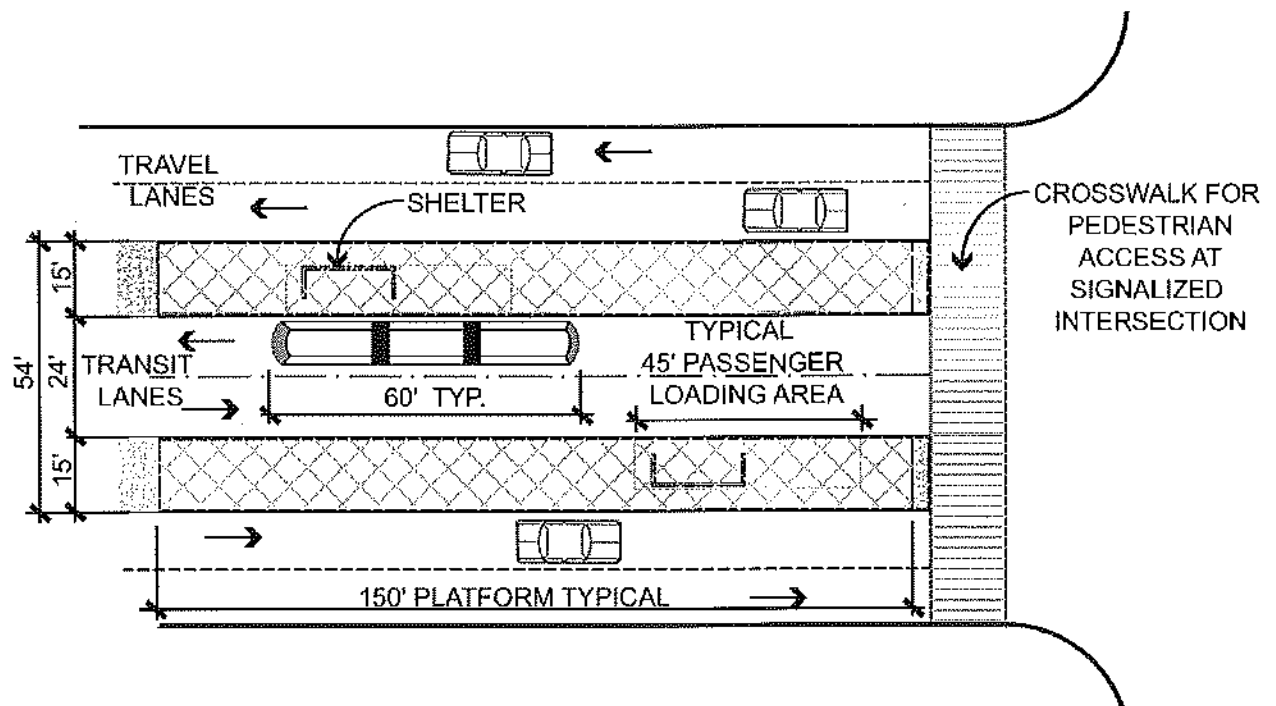
**Figure 1.8:**  
**Bulb-Out Curbside Station**

### ▪ **Median Stations**

This type of station location has the same physical requirements as a far-side or near-side station but is located in the roadway median. The median station typically serves median running dedicated transit lanes and is located near an activity center along the transit corridor. The median station cannot provide the "front-door" type access to passengers but does allow for the median running transit lanes to maintain reliable service levels. Three (3) types of median stations include:

#### ***Dual Station – Outside Platforms (Figure 1.9)***

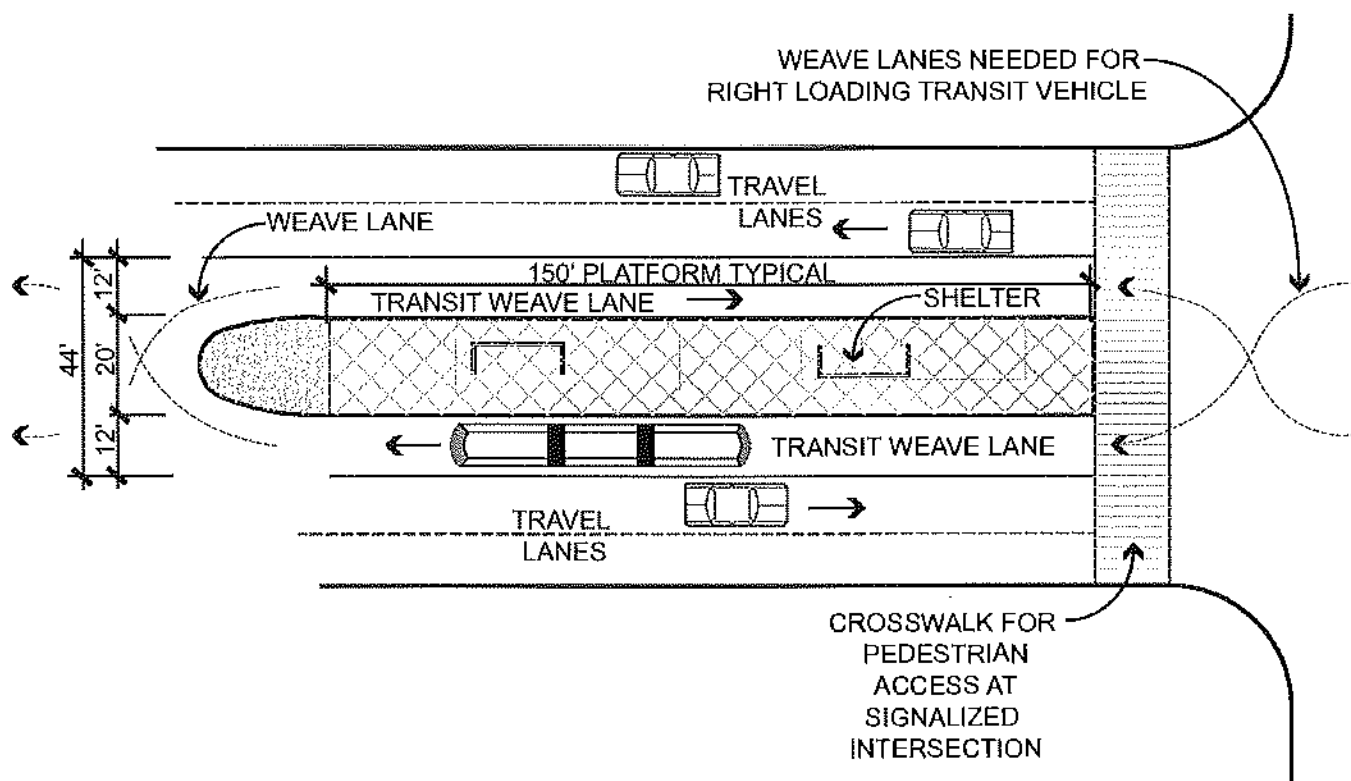
Dual stations provide loading platforms on both sides of the dedicated transit lanes. This station is typically used for transit vehicles that have only doors on the right-side.



**Figure 1.9:**  
**Dual Station with Outside Platforms**

**Dual Station – Center Platform (Figure 1.10)**

The center platform reduces the median station area by 10-feet of the outside platforms but requires two operational changes. Either transit vehicles with doors on the left side of the vehicle or an ability for the transit vehicle to weave to the opposite lane for right side loading and debarking.

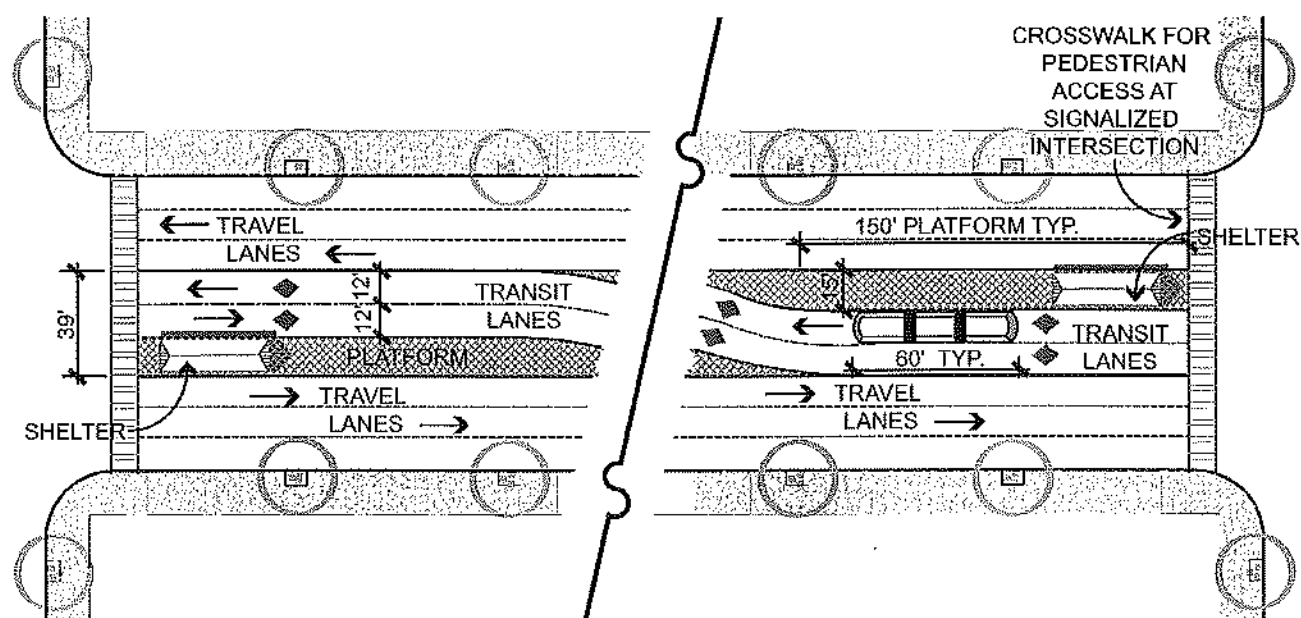


**Figure 1.10:**  
Dual Station with Center Platform



**Off-Set Station (Figure 1.11)**

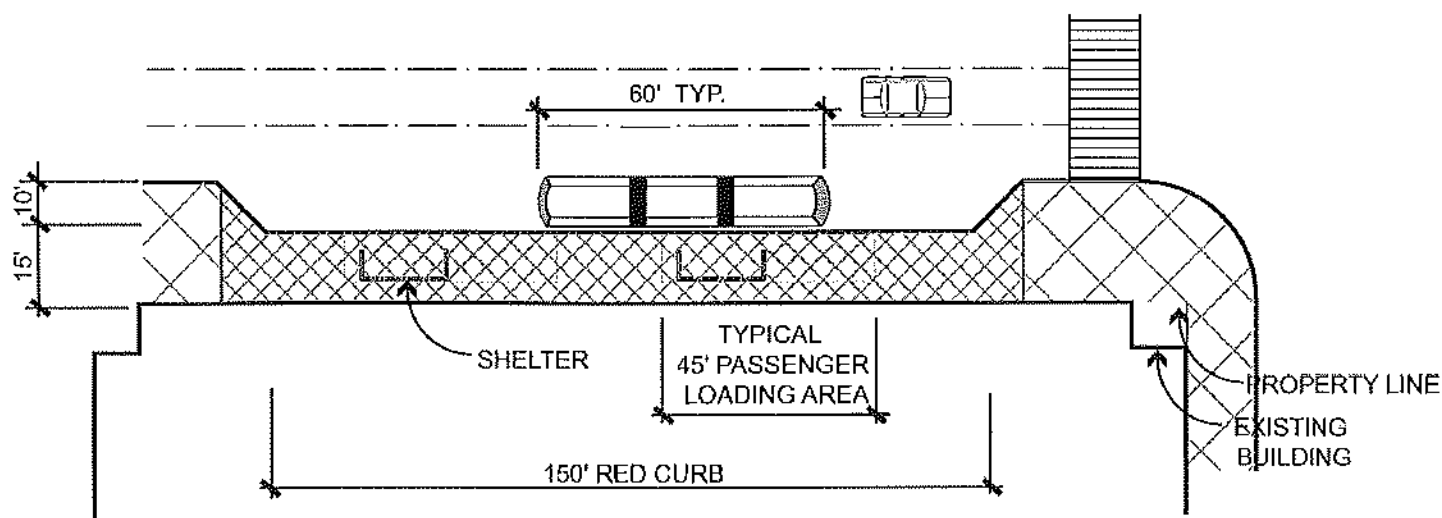
Off-set stations are similar to dual out-side platform stations, but require less right-of-way. By off setting the platforms you can reduce the station width to only 39-feet. The station platforms are typically at separate intersections requiring pedestrian access at two (2) different locations.



**Figure 1.11:**  
**Off-Set Station**

▪ **Turnout Station (Figure 1.12)**

Turnout stations provide “front-door” type service for projects typically within development areas or activity centers. The turnout stations are not typically used on major public streets and are not generally recommended due to poor transit operations. With this type of station it is difficult for the transit vehicles to re-enter the travel lanes and to maintain route schedules.



**Figure 1.12:**  
**Turnout Station**

## 1.5 LAND USE OPPORTUNITIES

Existing land use patterns vary along the length of each alignment. This report reviews the land use designations identified by the different jurisdictions participating in the Transit First project and provided by SANDAG for each of the alignments' station locations. After reviewing the existing land uses and proposed land uses (2020) the report identifies possible opportunities for additional transit supportive land uses or mixed-use development locations. The key concept in establishing mixed-use developments opportunities is to create neighborhoods where daily activities are integrated and transit conducive.

The areas identified for mixed-use opportunities define which type of land use would be the most appropriate, the primary land use component and what land use would be considered secondary. The intent is to provide opportunities for sufficient intensity with new development to increase ridership and ensure the success of the proposed alignments. Increasing density adjacent to transit nodes is one of the best methods of generating higher ridership as illustrated in **Figures 1.13 and 1.14**. It is generally recommended that:

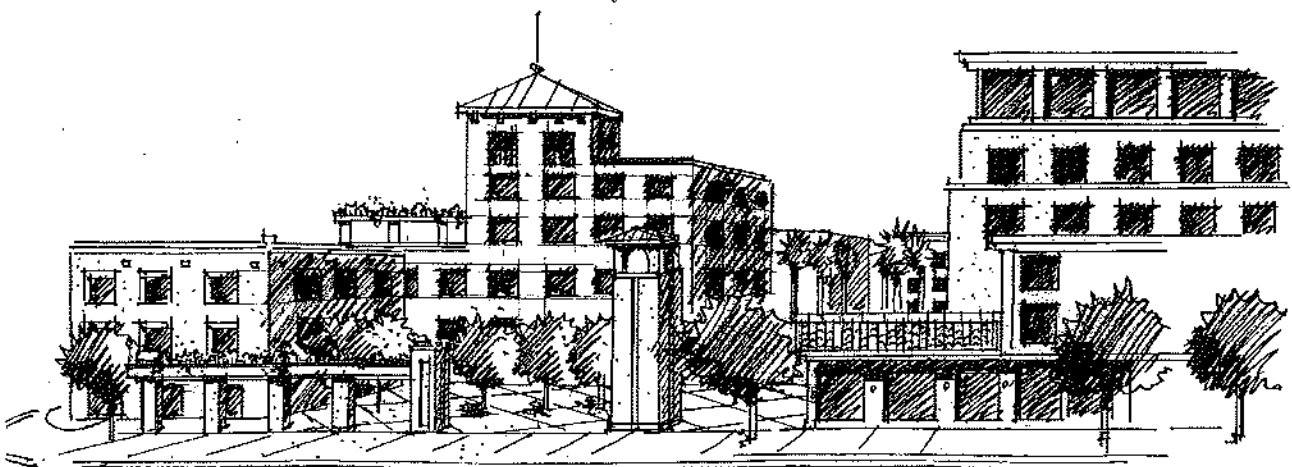
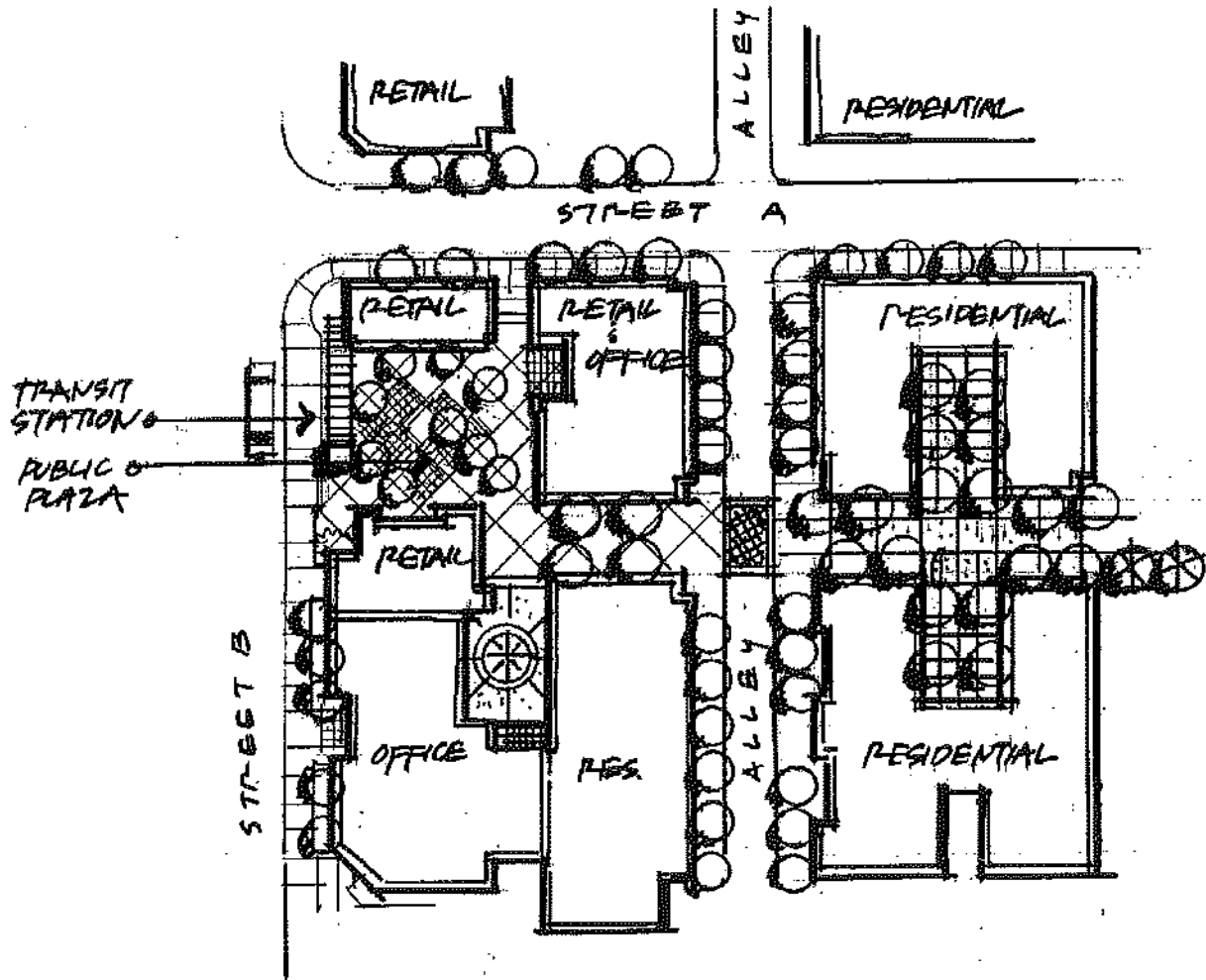
- As a minimum residential densities averaging 20-25 dwelling units per acre can be used when transit service headways are running every 10 minutes.
- For employment based uses (offices) the use of multi-story buildings is encouraged. This is a more efficient use of land with a development of .35 to .6 Floor Area Ratio (F.A.R.) being the minimum.
- Intensity of retail or commercial uses will vary depending on the location and market demand. Commercial uses should typically be developed as a supporting component of the overall mixed-use projects.

However, developing higher density projects in low-density neighborhoods tends to lead to community opposition to the projects. It is important that the agencies and developers involved in future projects work with the communities in developing attractive, well designed and compatible type developments. When design elements emulating the surrounding neighborhoods are incorporated into the design of the project it can help in gaining the acceptance of the local community. Additionally, opportunities for civic facilities, community buildings, or public spaces can also provide acceptance in a community without these types of public amenities.

## 1.6 ACCESS

Transit patrons at some point in their journey are pedestrian. So, as a general rule transit stations should be connected to the surrounding neighborhoods with direct, safe, pleasant, and convenient pedestrian access. The report focuses on access opportunities within ¼ mile to ½ mile of the proposed stations. This type of distance presents the best opportunity and realistic travel time for transit riders to "walk-up" to nearby transit stations. This is provided that there is safe and convenient access linking the neighborhoods to the stations.

Access issues are also explored in this report. Each proposed station identified in the six alignments is reviewed to determine ways of increasing pedestrian access from the surrounding neighborhood. Typically, the primary accesses to transit stations will be from public streets. For those streets that provide a logical access to the stations streetscape enhancement programs are identified providing an improved walking environment for pedestrians.



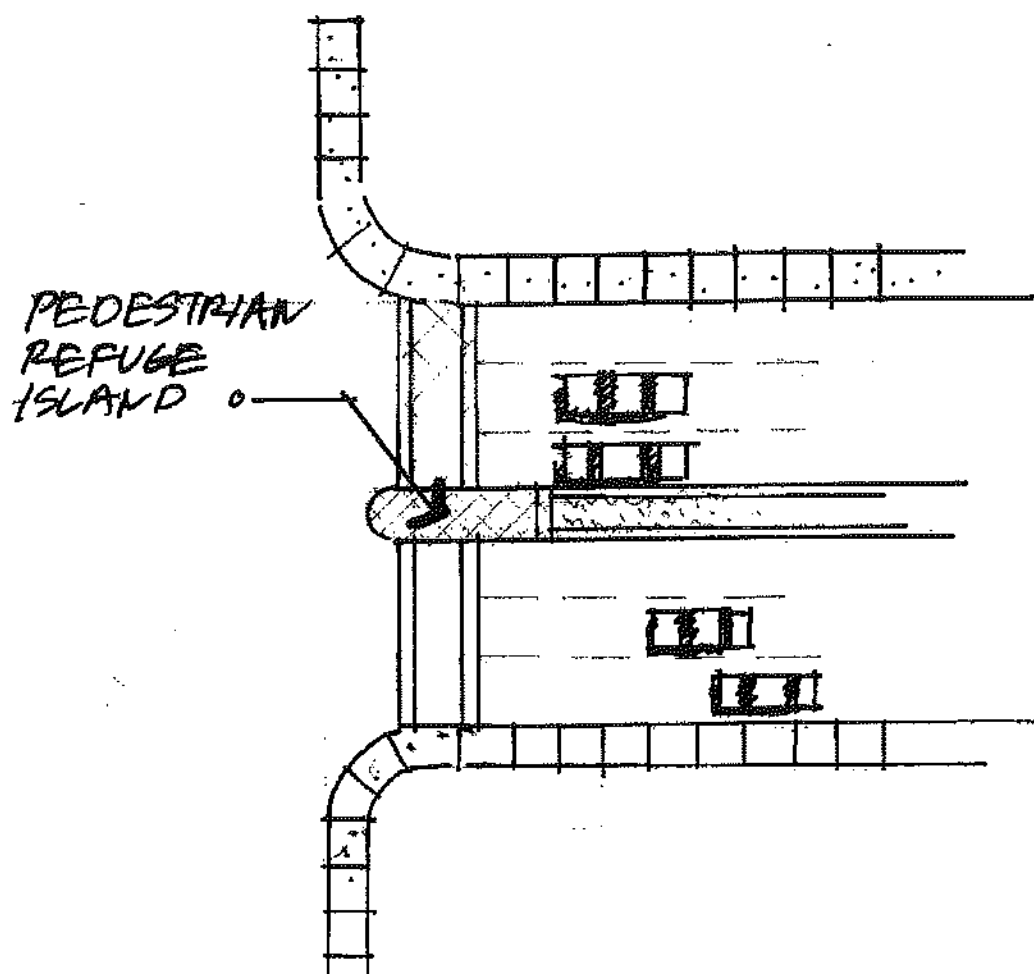
Figures 1.13 and 1.14:  
Intensifying Land Uses at Transit Station

The level of improvements varies from the older communities that need significant improvements to the newer communities that have already provided many pedestrian access enhancements. In general the improvements could include any of the following:

- **Pedestrian Refuge Island**

Pedestrian refuge islands provide a measure of safety for pedestrians and are used where street widths are extremely wide or the street is busy. Refuge islands work best on where there are long pedestrian crossing times and on street with speeds higher than 35 mph. These islands are located within an intersection or between lanes of traffic where pedestrian may safely walk and wait until traffic clears as illustrated in **Figure 1.15**.

Another benefit for pedestrian is that it can significantly reduce the delay in crossing unsignalized intersections by allowing pedestrian only to wait for vehicles in one direction at a time before crossing.

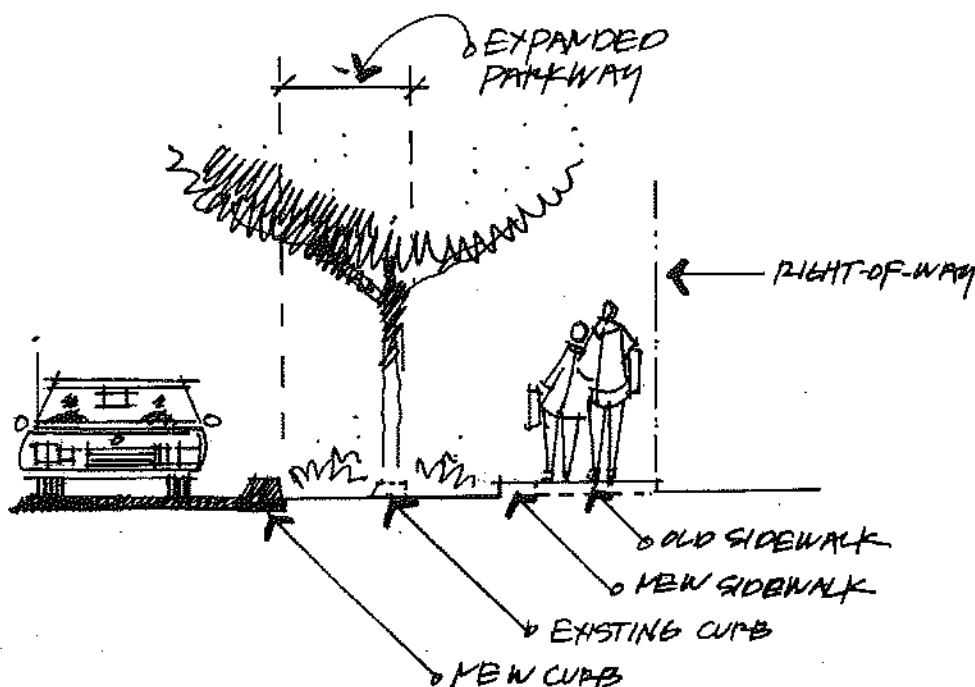


**Figure 1.15:**  
Pedestrian Refuge Island

### ▪ Widen Parkways

Safe and direct sidewalks are important in promoting pedestrian friendly environment to transit facilities. Creating a high quality pedestrian experience that encourages walking requires more than simple providing sidewalks. Retrofitting existing parkways to allow for wider sidewalks and to provide additional landscape improvements for street tree plantings is beneficial to encouraging pedestrian mobility. Increasing the parkway can come from:

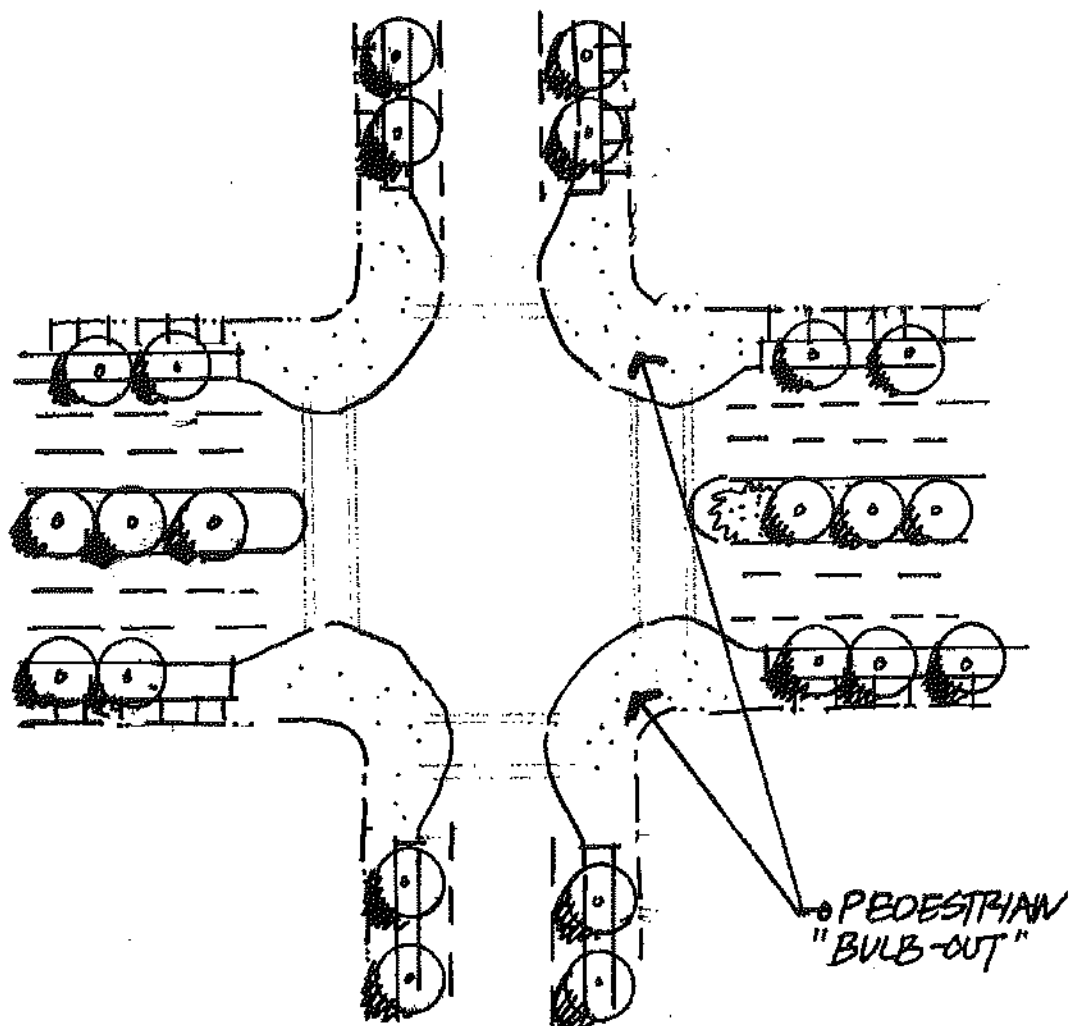
- Reducing the existing curb to curb section (see **Figure 1.16**)
- Acquiring additional right-of-way from adjacent property
- Requiring an additional setbacks or landscape easements from new development



**Figure 1.16:**  
Expanded Parkway

▪ **Pedestrian "Bulb-Outs"**

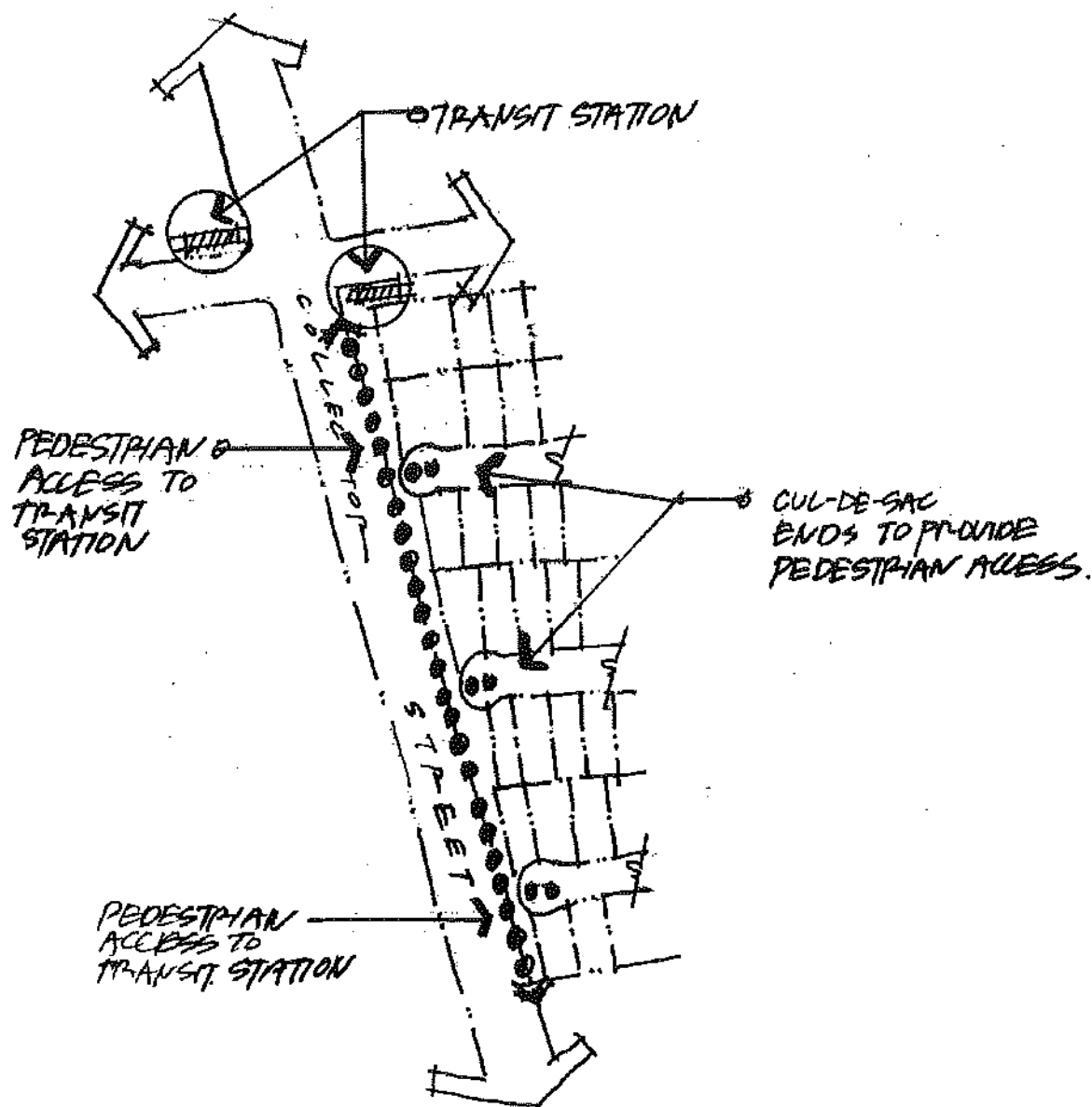
Pedestrian bulb outs or curbs extensions at intersections narrow the street and widen the sidewalk at the location where pedestrian cross as illustrated in **Figure 1.17**. The "bulb-out" sidewalk narrows the street at intersection by widening the sidewalk at the point of crossing and shortening the intersection crossing for pedestrians. Using "bulb-outs" at or near to transit stations provides a safer condition for transit riders.



**Figure 1.17:**  
Pedestrian Bulb-Out

- **Pedestrian Connections from Cul-de-sacs**

In existing neighborhoods, or in new ones, providing pedestrian connection from cul-de-sac streets to pedestrian corridors leading to transit facilities will be an important consideration. Most pedestrian access from cul-de-sac streets is cut off to the surrounding community (see **Figure 1.16**). Providing pedestrian connections to primary corridors providing direct access to transit stations will encourage and promote transit ridership.



**Figure 1.18:**  
Pedestrian Connections from Cul-de-Sac



- **Directional Signage**

Providing directional signage to transit station in the adjacent neighborhoods can help lead potential first-time transit riders in reaching the transit stations. Using clear "way-finding" signs will help ensure that pedestrians can find the easiest and most direct routes to transit stations.

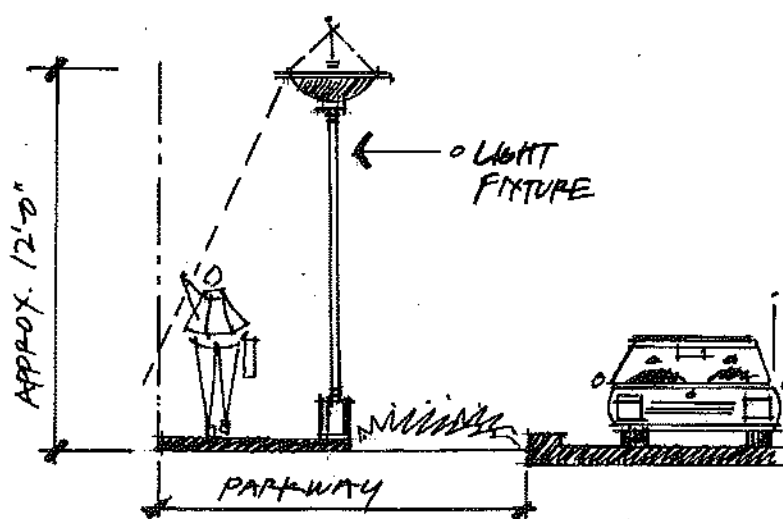
- **ADA Accessibility**

Accessibility needs and requirements for the disabled are defined by both federal and state (California Title 24) standards. The ADA was signed into law on July 26, 1990 to assure that disabled persons will have full access to all public facilities and along public rights-of-way.

Typically, this involves removing barrier to wheelchairs and installing accessible wheelchair ramps. However, this also includes other classifications of disability, including sight and hearing impairments. Generally, all transit station and surrounding pedestrian facilities must comply with ADA standards and California Title 24, and take into account the entire range of disabilities.

- **Pedestrian Scale Lighting Improvements**

It is anticipated that most of the proposed alignments and associated stations would be in operation during night time hours. Providing pedestrian scale lighting at the stations and for the primary pedestrian accesses to the surrounding neighborhoods will provide an additional level of safety and security for the transit riders (see **Figure 1.19**).



**Figure 1.19:**  
Pedestrian Scale Lighting

## Chapter 2 - 510 Alignment



### 2.1 Summary Overview and Conclusions

The following section provides an overview of the general route alignment, station types, and priority treatments for the 510 alignment. Additional project analysis and more detailed information pertaining to the alignment designs are provided in the sections following this summary.

#### A. 510 Alignment – Downtown San Diego to San Ysidro Intermodal Transportation Center

The Red Car 510 route is an existing alignment that operates from the Qualcomm Station in Mission Valley to the San Ysidro Intermodal Transportation Center (ITC). The alignment passes through Mission Valley to Old Town, through Centre City in Downtown San Diego to its terminus, the San Ysidro ITC.

Within the South Bay Transit First Study Area the 510 alignment is the existing Blue Line Trolley service adjacent to the Interstate 5 corridor. The 510 alignment enters the study area just north of the 8<sup>th</sup> Street Trolley Station in National City with the terminus of the route located at the San Ysidro Intermodal Transportation Center at the United States border crossing.

#### B. Alignment Station Types

The 510 alignment stations planned within the South Bay Transit First Study area will be located at all of the existing trolley stations starting at the 8<sup>th</sup> Street Trolley Station. Currently there are nine (9) stations defined in the study area with no additional stations planned.

- |                           |  |
|---------------------------|--|
| ➤ 8 <sup>th</sup> Street  | ➤ Palm Avenue                          |
| ➤ 24 <sup>th</sup> Street | ➤ Iris Avenue                          |
| ➤ E Street                | ➤ Beyer Boulevard                      |
| ➤ H Street                | ➤ San Ysidro Intermodal Transit Center |
| ➤ Palomar Street          |  |

The type of transit station associated with each location is summarized in **Table 2.1**. Further discussion for each station is provided in *Section 2.3: Station Location and Types*.

#### C. Priority Treatment Conclusions

The priority treatments recommended for the 510 are summarized and illustrated in **Figure 2.2**. These recommendations are based primarily on the corridor's congestion levels, physical constraints, and the feasibility for implementation of improvements.





Alignment and Stations

MTDB - South Bay Transit  
First Project  
**ROUTE 510 - Downtown San Diego  
to San Ysidro Intermodal  
Transportation Center via existing  
Trolley Line**

- LEGEND**
- Alignment
  - Project Boundary
  - Proposed Freeways
  - Red Car Stations



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ECONOMISTS**

**Wilbur Smith Associates**  
9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

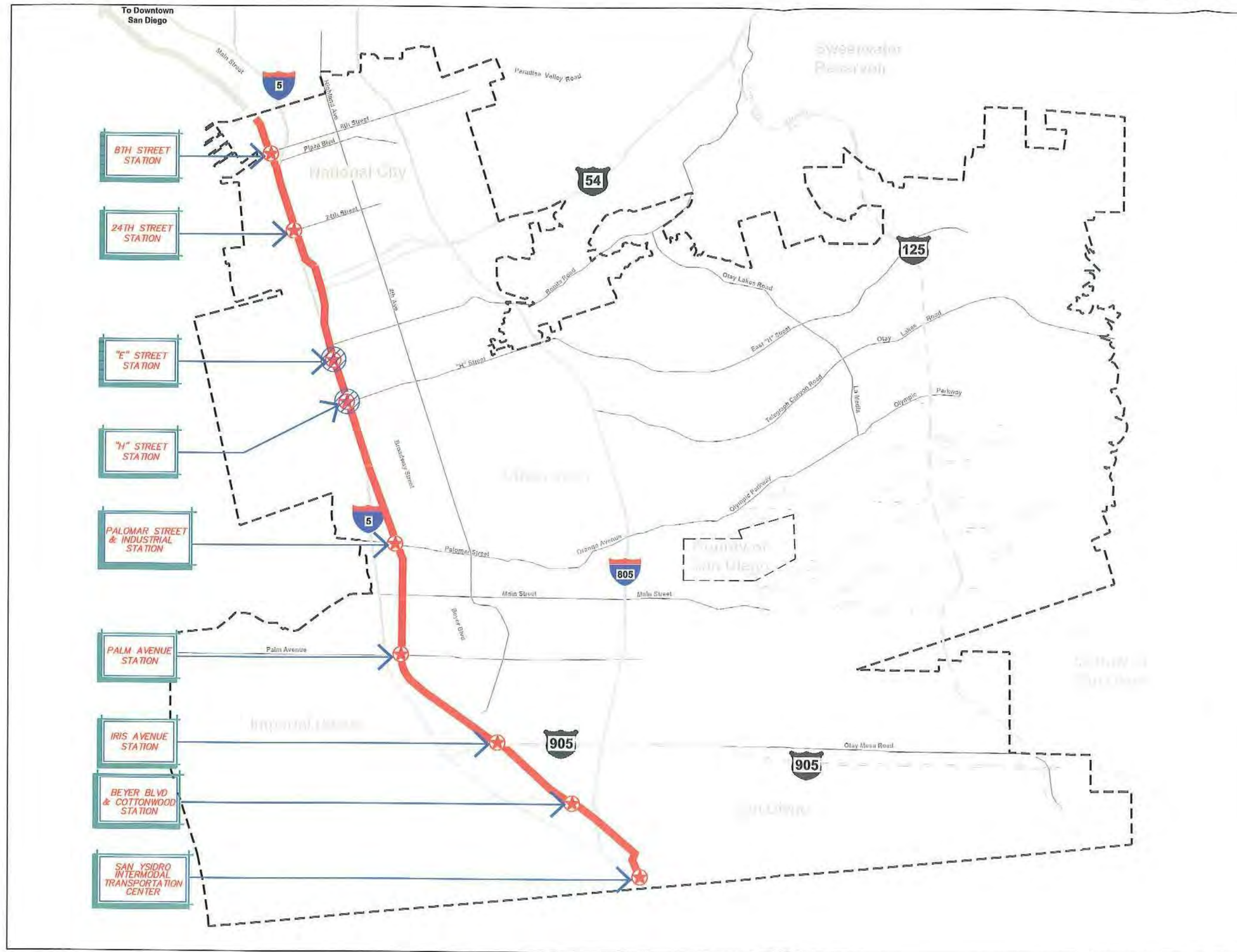
**FIGURE 2.1**  
**ALIGNMENT AND STATIONS MAP**  
**510 ALIGNMENT**



Station Locations	Station Types								
	Freeway Median Station	Off Street / Transit Hub	Curbside Far-side Station	Curbside Near-side Station	Curbside Bulb-out Station	Curbside Mid-Block Station	Median Dual Station	Median Offset Station	Turnout Station
8 <sup>th</sup> Street		●							
24 <sup>th</sup> Street		●							
E Street *		●							
H Street *		●							
Palomar Street		●							
Palm Avenue		●							
Iris Avenue		●							
Beyer Blvd/ Cottonwood St		●							
San Ysidro ITC		●							

\* These stations are proposed to have grade separated crossings at street intersections.

**Table: 2.1**  
**510- Summary Table - Station Locations and Types:**



## Transit Priority Treatments

MTDB - South Bay Transit  
First Project  
**ROUTE 510 - Downtown San Diego  
to San Ysidro Intermodal  
Transportation Center via existing  
Trolley Line**

### LEGEND

- Dedicated Alignment  
(Existing Trolley Line)
- - - - - Project Boundary
- - - - - Proposed Freeways
- ★ Red Car Stations
- ★ Grade Separated Stations

0 1/2 1 mile



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 2.2**  
**PRIORITY TREATMENTS MAP**  
**510 ALIGNMENT**

## 2.2 510 ALIGNMENT ANALYSIS

The 510 alignment is a Red Car Service that will operate from the Qualcomm Station in Mission Valley to the San Ysidro ITC. The alignment will consist of the San Diego Trolley operations that currently operate along the route and improvements that will accommodate the forecasted increase in ridership. The 510 is unique among the Tier 1 alignments because the level of ridership also creates congestion issues that will need to be addressed. Additional analysis is provided below regarding the ridership congestion as part of the overall 510 alignment analysis and a short summary is illustrated in **Figure 2.3**.

Significant congestion is forecasted along the alignment and in the travel corridor, thereby reducing travel speeds and service reliability for the Transit First routes. Transit priority measures are identified to minimize the impact of these congested areas and maintain service reliability. The feasibility of implementing these priority measures in the near term or long term is also discussed. References are also made to the 540 alignment, a Yellow Car Service planned to provide express service along the Interstate 5 corridor sharing four of the 510 stations.

### A. Ridership Congestion

Based on counts taken in the fall of 2000, the 510 alignment served approximately 25,000 riders into the 8<sup>th</sup> Street Station on a typical weekday. This ridership count was based on counting riders from both directions. In 2020 SANDAG estimates the 510 alignment will serve approximately 15,000 riders into the 8<sup>th</sup> Street Station. The reduction is due to the implementation of the parallel 540 alignment.

The 540 route will carry approximately 40,000 riders into the 8<sup>th</sup> Street station in 2020. Based on the final draft of SANDAG's *Mobility 2030* plan the HOV/ Managed Lanes facilities, used by the 540 alignment, should be completed by 2020. Until then, the 510 alignment will carry the combined ridership forecast for these two routes, restricted only by capacity. Thus, the 510 is forecasted to carry as many as 45,000 riders per day into the 8<sup>th</sup> Street station in 2020, an increase of eighty percent over the riders carried in 2000. This increase will create substantial ridership congestion for the line.

Peak hour trains currently operate near passenger capacity. If this situation is allowed to deteriorate without matching additional passenger demand with additional supply, train occupancy levels will reach levels that reduce train throughput and affect system capacity. When trains become heavily loaded dwell times increase because it takes longer for disembarking passengers to reach the doors and exit the vehicles. It also takes embarking passengers more time to enter the train and move away from the doors to a seat or place to stand.

With a sufficient increase in dwell times, the number of trains that can be operated is reduced and system capacity actually falls. Such conditions can be expected if additional passenger capacity is not provided to serve the forecast passenger loads on the 510. Thus additional passenger capacity on the 510 is warranted.

This remainder of this chapter presents priority measures whose implementation is necessary to maintain a high level of transit service on the 510, without consideration for implementation of the 540 route which might render some of the 510 priority measures unnecessary.

## B. Traffic Congestion

A second aspect of congestion for the 510 corridor is roadway congestion caused by closed crossing gates at grade crossings. Levels of congestion at most grade crossings currently do not appear to be excessive. However, growth in street traffic and increases in train frequency to serve transit patrons may increase grade crossing congestion.

At-grade crossings at certain intersections will pose problems in the near term. Streets along the 510 alignment that could experience the most impact at grade crossings are most likely to be:

- E Street (Chula Vista)
- H Street (Chula Vista)

These intersections currently qualify for grade separations based on a MTDB policies and procedures evaluation. A copy of these policies and procedures are included in the appendix.

## C. Physical Constraints

Improvements along the corridor must overcome numerous constraints in order to increase the capacity of the 510 route. One possible improvement is the addition of a parallel track. The addition of a parallel track is extremely constrained by a variety of physical barriers including buildings, power lines, the I-5 right-of-way, overhead bridge supports, topography, and other land uses or existing development. Land is available in some areas for additional parallel track, but widening the entire corridor from the United States/Mexico border to downtown San Diego is not feasible.

Land available for widening south of the Iris Avenue Station is under consideration for the construction of the station to serve the 540 alignment and is discussed in *Chapter 3*. A summary of these comments are illustrated in *Figure 2.3*.

## D. Priority Treatments

The following priority measures are proposed to address forecast congestion. The identified congestion areas are illustrated in *Figure 2.2*

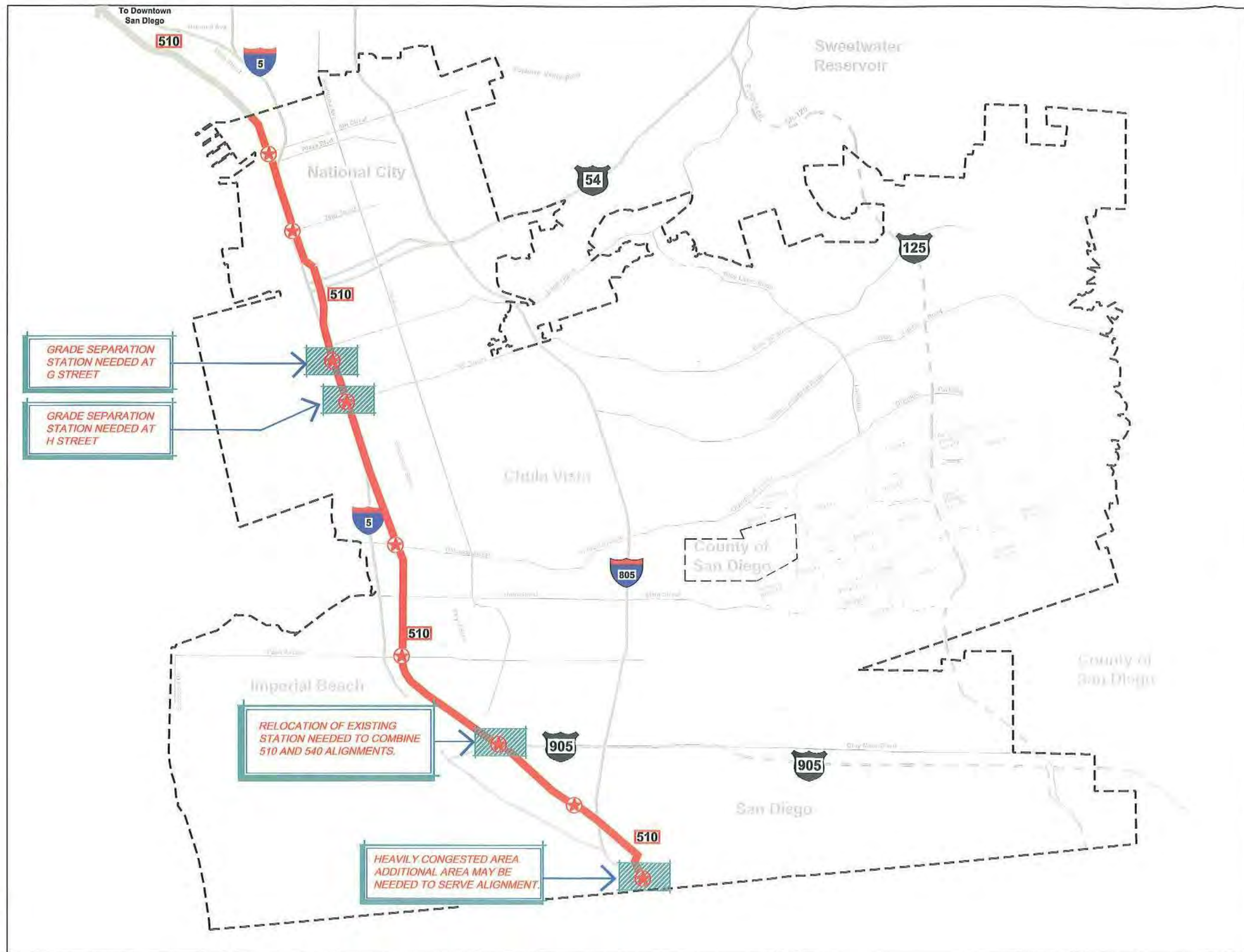
### ▪ **Near Term (2010)**

Presently the 510 operates within its own dedicated right-of-way providing for a high level of service reliability (*See Figure 2.2*). Ridership is expected to increase on the 510 alignment to the extent that, without additional passenger capacity, crush loads may actually reduce system capacity. Operational improvements are needed to accommodate as much of the additional ridership as possible. Three (3) near term measures could include:

#### ***Shortened Headways***

This will be the most efficient priority treatment to improve transit service in the corridor. The 510 operation currently consists of three cars on 7 minute headways during the peak period in the study area.





## Physical Constraints Map

MTDB - South Bay Transit  
First Project

**ROUTE 510** - Downtown San Diego  
to San Ysidro Crossing via existing  
Trolley Line

### LEGEND

- Alignment
- - - - - Project Boundary
- . - . - Proposed Freeways
- ★ Red Car Stations

0 1/2 1 mile



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 2.3**  
**PHYSICAL CONSTRAINTS MAP**  
**510 ALIGNMENT**



Reducing train headways below 7 minutes in the block signal controlled exclusive right-of-way south of the 12<sup>th</sup> and Imperial station will require improvements to the existing train block signal system. Even with headway improvements in the study area, minimum headway and maximum consist constraints elsewhere along the line, particularly in the mixed traffic areas in downtown San Diego, create practical operational limitations for the study area. Headways in the downtown area are constrained by traffic signals and track sharing with the Red Line. Further investigation will be required to determine the extent to which headways in the study area can be reduced without creating operational problems in the downtown area.

Reducing train headways may also result in traffic congestion at grade crossings. Additional trains will result in an increased frequency of lowered crossing gates, thus reducing the vehicular capacity at the crossings. A potential near term priority measure to reduce congestion at these crossings is improved signalization and channelization at intersections adjacent to the grade crossings.

#### ***Increasing the Number of Cars per Trolley***

This is another potential priority measure that could be implemented with minimal improvements. Until recently four car consists (or four car trains) were operated on the line. These trains were broken into two car consists for operation on city streets north of the 12<sup>th</sup> and Imperial Street Station, in order to avoid excessive intersection blocking. Breaking trains is a labor intensive activity that induces delay into the system. It also reduces headways in the downtown area substantially. It is unclear if such headway reductions are sustainable in view of traffic signals in the downtown area and the sharing of track with the Red Line.

Further investigations are needed to determine the potential for the previously mentioned priority treatments, since changes to the numbers of cars per train and train headways will have implications both within and outside the study area.

#### ***Grade Separation***

Potential priority measures such as grade separation and elevated tracks are measures that will alleviate traffic congestion on streets with unacceptable levels of traffic service. Based on the current and projected traffic volumes, grade separation should be considered at both the E Street and H Street intersections. Although this study recommends the grade separation to be elevated future analysis and engineering studies should determine if below grade separation is also possible.

Palomar Street has also been noted as a possible intersection needing grade separation. Further analysis will be needed to determine if this priority measure is warranted at these locations.

It should be noted that grade-separated intersections will have an impact on current operations and the stations located on these streets. While a grade separation is under construction, trolley service must be maintained. The configuration for these grade separated intersections will include a transit line elevated at the locations of the current station platforms. Elevated alignments will return to grade approximately 500-750 feet from the street being bridged. Further discussion of configurations is described in *Section 2.3 Station Location and Types*.

▪ **Long Term (2020)**

Implementation of the 540 alignment is a long term improvement that will relieve congestion on the 510 sometime after 2020. Based on this schedule, near term measures on the 510 should be considered to accommodate increases in ridership. These measures include reducing train headways and increasing the number of cars per train. However, substantial reductions in train headways may increase traffic congestion on streets with at-grade track crossings. This may require some measure of grade separation, particularly at E and H Streets.

As noted above, these improvement measures must be assessed to determine their feasibility to operate in downtown San Diego. If the 540 is not implemented, the need for reduced train headways, increased cars per train, and grade separations on the 510 will become more acute.

### **E. Engineering and Environmental Issues**

The following outlines the other engineering and environmental issues and even the physical constraints associated with improvements needed along the 510 corridor.

▪ **Engineering Issues**

**Grade Separation**

- Increased frequency of trains will result in reduced vehicular capacity at grade crossings. The crossings at E and H Street are likely to experience unacceptable traffic service. Grade separation of the street and transit line will eliminate traffic congestion problems at these locations. Detailed traffic analysis at each crossing is necessary to determine what level of vehicular and transit traffic congestion is needed before grade separation is warranted. The analysis should also determine when those vehicular congestion levels are expected.
- This study identifies an elevated section as the choice for grade separation primary due to cost associated with implementation. It is typically less expensive to construct elevated segments than for below grade sections. Elevated sections have less unforeseen issues than those for below grade options. Below grade sections may have to deal with issues such as below grade utilities, environmental hazards, and unknown soils conditions typically all leading to higher costs. However, subsequent studies will be needed to determine which solution would provide the best option for grade separation particularly at E and H Street.
- The grade separation for E and H Street grade separations and station types need to be studied in concert. If it is determined that an elevated sections at H Street is the best option for grade separation then E Street may have to adopt a similar design. If one is elevated and one is developed below grade this segment of the alignment could produce the up and down movement of the trolley cars providing a "roller coaster" effect. This effect can be seen at another location north of downtown San Diego and has not been well accepted. To further eliminate the possibility of the "roller coaster" effect an analysis should also review the feasibility of maintaining the alignment elevated through the entire

segment from E to H Street. This would also have the added benefit of avoiding congestion impacts at F Street should F Street become a more significant arterial.

- At both the E and H Street crossings, grade separation has been illustrated by raising the transit rail line above the existing street grade. This will require approximately 2,500 feet of aerial guideway and associated utility, track, catenary, landscaping, and fencing improvements. Additionally, the H Street light-rail station platforms will be elevated to the level of the tracks requiring construction of elevators and stairs for access. The E Street station could be elevated in its current location or it could be relocated approximately 500 feet to the south to the track section immediately south of the elevation. Between the elevated sections over E and H Streets the track will return to its existing grade.
- Between the elevated sections over E and H Streets the track will return to its existing grade. There will be approximately a half mile of track between the elevated sections over E and H Streets. Train speeds on each of the elevated sections will be slow, since there will be a station either on the elevated section itself (at H Street) or immediately adjacent to it (just south of E Street). Because of the distance separating the elevated sections as well as the slow train speeds on the elevated sections, there should be no substantial rider discomfort (or roller coaster effect) from the vertical curves along the elevated sections.
- The elevated track in the vicinity of E and H Streets will be located above the existing track. Construction of the elevated sections will require temporary shoofly track and supplemental infrastructure in order to maintain service during construction of the elevated sections. There appears to be sufficient right-of-way available in this area to construct two additional tracks at-grade immediately east of the two existing 510 tracks. However, this will require further detailed investigation.
- Of the two additional at-grade tracks, the more easterly will be a temporary shoofly track for northbound 510 service. The more westerly of the two additional tracks will be a permanent freight track with temporary catenary to serve the southbound 510 during construction of the elevated sections.
- Freight service will continue at-grade through the area after completion of the elevated 510 track. Freight service will be maintained at-grade because the length of the elevated structure necessary to accommodate freight trains will increase substantially, as will the weight bearing capacity. Freight service is only operated at night when traffic service at grade crossings is not a substantial issue. Similarly, conflicts between freight trains and 510 passengers in the vicinity of the E and H Street stations will be minimized due to the hours of operation of freight service. Nonetheless, safety measures will be required.
- Warning lights and gates at the E and H Street crossings will require repositioning to serve the new freight and temporary shoofly crossings. Some structures and other facilities at the train station sites may require demolition to accommodate the two additional tracks east of the existing tracks. Detailed surveying and other information are required to more fully evaluate the feasibility and impacts of construction of the additional two tracks in these areas.
- The Public Utility Commission (PUC) or others may take issues with the increase headways identified for trolley service. The increased headways may present issues with traffic congestion and pedestrian safety at intersections. The PUC

may support the solution of grade separation at intersections that are the most congested.

- While detailed traffic analysis at each crossing is necessary to determine at what level of vehicular and transit traffic grade separation is warranted, increased train frequency makes the likelihood of grade separation somewhat stronger. However, increased train frequency depends upon several additional engineering and operational issues covered below.

#### **Electrical Capacity**

- Electric power consumption will increase with an increase in the number of trains on the route. Additional substations will be required along the route in the study area. It is likely that similar improvements will be necessary in areas north of the study area. Power transmission capacity to both existing and additional substations may also require upgrading. A complete analysis of the ability of existing electrical supply to serve an increased number of trains will be required before additional service on the route can be implemented.

#### **Train Signaling**

- The train block signal system in the study area will need improvement in order to handle reductions in train headways. The current block signaling system in place in the study area has a design limitation of 5 minute headways, with a practical limit of the 7 minute headways currently in use during the peak hours. While headways of 5 minutes are possible with the current signal system, they are only sustainable if there are no train delays. Any delay will cascade upstream through the entire system, thus rendering 5 minute headways impractical without upgrading the signal system.
- Upgrading the existing signal system will require reducing block lengths as well as increasing the number of crossover tracks. These improvements will be necessary not only in the study area, but also along the track to the north of the study area.
- Other operating constraints north of the study area, particularly headway and train length constraints on the sections of street operations in downtown San Diego, require further investigation. Increasing train frequency in the study area is not feasible without increasing train frequency in downtown San Diego.

#### **Downtown Operating Limitations**

- Operations in downtown San Diego, north of the 12th and Imperial Station, currently operate in mixed traffic on city streets. Operations in this area are constrained by an effective consist limit of three cars. Trains of greater length excessively block intersections when the train is stopped. Previously when train consists of four cars were operated in the study area they were broken into two trains of two cars each for operation in downtown. This practice is not only costly and labor intensive, but yields delay and reduces headways substantially on the downtown track. Extensive reconfiguration of stations and vehicular use of city streets will be required to accommodate four car trains in the downtown area.
- Reducing headways in the study area will result in reduced headways in the downtown area. In addition to serving the 510, downtown track also serves the San Diego Trolley's Orange Line. The headway capacity of the downtown track is

a function of traffic signals, traffic congestion, dwell times, and other factors. Whether the downtown track has sufficient headway capacity to serve 510 trains on shorter headways and Orange Line trains will require further investigation.

#### ***Iris Avenue Station Relocation***

- Relocation of the Iris Avenue station south of Iris Avenue under the SR-905 overpass is planned as part of the 540 route implementation. A thorough examination of this relocation is presented in *Chapter 3*.

#### ***San Ysidro ITC***

- The 510 station at the San Ysidro ITC at the border crossing is a terminal station for the route. Southbound trains enter the station and stop. As passengers board and alight, the driver makes his way from the southern end of the train to the northern end of the train to start the northbound trip. Currently 8 trains per hour operate during the peak hours. If this is increased to 12 trains per hour it is unclear if there will be adequate time for a leading train to clear the station before the arrival of the following train. Further analysis will be necessary to determine the required time to enter the station, dwell, and clear the station blocks upon departure.
- The station, currently being redeveloped, will be capable of holding two trains at one time, but whether their use will be required routinely during peak hours of operation will require additional analysis.

#### ***Drainage and Geotechnical***

- Drainage improvements related to the engineering of the relocated Iris Avenue station and the elevated track sections near the E and H Street crossings will be required. None of these appear to present engineering challenges of a dramatic kind. Water quality impacts from runoff related to track elevation may require mitigation, but this is not expected to present major engineering challenges. A thorough geotechnical examination in the area of track elevation will be required to support the engineering of both the additional track construction and the elevation. Neither of these is expected to present major engineering challenges.

### ▪ **Environmental Issues**

#### ***Traffic***

- As noted above, detailed traffic analysis at the E and H Street grade crossings will be needed at each crossing to determine at what level of vehicular and transit traffic grade separation is warranted.
- Peak hour traffic turning counts, channelization, signalization, train frequency, pedestrian counts, and other data are necessary to fully determine the amount of delay experienced by motorists at these rail crossings. Forecasts of increases in street and rail traffic are necessary to determine at what point in time motorists will begin to experience unacceptable amounts of delay in crossing the tracks. Congestion at these crossings, and their analysis, are exacerbated by the presence of signalized intersections, high bus and pedestrian volumes, and freeway ramps in close proximity to one or both of the grade crossings.

- Any increase in train frequency will increase motorist delay. However, a complete analysis is necessary to determine the amount by which delay will increase and whether the current and forecast amounts of delay are unacceptable based on MTDB's policies.

#### **Noise and Vibration**

- Increases in train frequency will increase noise and vibration along the tracks. Because of the proximity of the tracks to residential areas and other noise-sensitive sites, increases in noise may be a significant impact requiring mitigation. Similarly, the proximity of the tracks to structures along the right-of-way, suggests that potential structural impacts from additional vibration should be thoroughly examined.
- A more thorough assessment of potential noise and vibration impacts will be required as part of major capital improvements, including track elevation in the E and H Street areas. If the E and H street intersection have below grade improvements the associated noise may be lessened. While the impact area of those improvements is relatively limited, a noise and vibration assessment for the entire corridor may be required as part of any project to increase the electrical power supply to the route or upgrade the block signal system in order to operate trains more frequently.

#### **Visual**

- Elevation of the track in the vicinity of E and H Streets may have a substantial visual impact on these street corridors. A more thorough assessment of potential visual impacts will be required as part of this project. Track elevation could be used to create entrance gateways or other improvements to the community if properly and sensitively designed.

### **F. Feasibility of Priority Treatment Implementation**

#### ▪ **Near Term (2010)**

Reduced headways are feasible, but will require improvements in train block signal systems. These improvements will be required in the study area as well as to its north. As noted above, further investigation of the feasibility of reduced headways in the downtown area is required.

Longer consists (more cars per train) are operationally feasible and have been used in the past. The combination of longer trains and reduced headways may create operational problems outside of the study areas. This is particularly true north of the 12<sup>th</sup> Street and Imperial Station where operation of the 510 takes place on city streets in downtown San Diego. Further investigation of these impacts and priority treatments both inside and outside the study area are necessary.

Grade separation at the identified major intersections is feasible but will require significant capital improvements (including station redesign). Ridership on the 510 alignment is expected to increase until implementation of the 540 alignment. Implementation of the 540 alignment should be coordinated with improvements made to the 510.

- **Long Term (2020)**

Construction of an additional track parallel to the 510 alignment is physically constrained and is not feasible throughout the entire study area. Furthermore, the addition of the parallel track may create an operational bottleneck if capacity in the area north of the study area is not improved. Potential long term improvements to the 510 and their feasibility are the same as those noted above in the short term: increased train frequency, increased train consists, and grade separations.

Major capital investment improvements made to the 510 alignment such as an upgraded block signal system, grade separated crossings, parking facilities, and station improvements should be coordinated with the needs associated with the 540 alignment, planned to provide service in the 510 corridor.

## **G. Conclusions**

By 2020 ridership on the 510 corridor is expected to increase by eighty percent. It is unlikely that the 540 route will be implemented by 2020. This will result in all of the increased ridership congesting operation of the 510. An increase in train frequency will need to occur in order to accommodate this increased ridership and relieve congestion on the 510. However, an increase in train frequency will result in traffic congestion at grade crossings and require grade separation. The type of grade separation (above or below) to be used at the most congested intersections will require subsequent analysis.

Track expansion of the 510 is not feasible in several locations within the study area as portions of the corridor are heavily constrained. So priority treatments of increased headways, grade separated crossings at congested intersections, and possible increasing the number of cars per trolley will be needed to ease congestion and meet the increasing ridership demands in this corridor.

## 2.3 STATION LOCATION AND TYPES

The addition of stations is not anticipated for the 510 corridor. The majority of the stations along the 510 corridor are considered "Transit Hubs" since they offer both park and ride type facilities and transfer points for Blue Car service. Improvements to these stations may include at-grade and grade separated platforms with additional park and ride facilities. A shared above-grade platform is being considered for the H Street station to avoid a congested intersection and to improve transfer capabilities. Additional park and ride facilities are considered a major improvement for many of the 510 stations. These improvements will be based upon defining each station's needs, which will be determined by forecasting each station's modal accessibility.

### A. 8th Street Station

The 8<sup>th</sup> Street Station will continue to operate as a park and ride facility. The 510 station currently provides approximately 124 daily parking spaces immediately west of the trolley station platform. The parking lot typically operates over its capacity particularly during peak commute periods when approximately ninety-five percent of the lot is full. The station also serves as a transfer hub for the 55 Blue Car service. The Blue Car station is curbside serving and is located directly on 8<sup>th</sup> Street. The curbside location of the Blue Car Station eliminates the need for the Blue Cars to enter into the parking area.

#### ▪ Right-of-Way Requirements

Additional right-of-way will not be required for the continued operation of the 510 station. However, station improvements include off-street platforms to accommodate the Blue Car service and additional parking (structure). These uses will require additional land at the station and is shown in **Figure 2.4**. The amount of land needed will require further investigation and coordination with development of the adjacent 540 station at 8<sup>th</sup> Street and Harbor Drive.

#### ▪ Land Use Integration

##### **Existing (1999)**

The existing land use plan (1999) identifies numerous land uses associated within ¼ mile to ½ mile of the 8<sup>th</sup> Street Station and is shown in **Figure 2.5**. The existing land uses in this area are older industrial and federal facilities associated with the Naval Reservation west of Harbor Drive.

The 8<sup>th</sup> Street Station is bordered by a drainage channel and vehicle storage area directly to the north. To the south, the station is bordered by Navy storage facilities and commercial/office uses. To the east the station is bordered by light industrial and warehouse uses. To the west of the station is a parking lot and across Harbor Drive is the U.S. Naval Reservation. In general the existing land use intensities located east of Harbor Drive and within close proximity to the station are considered low and not extremely transit supportive.

##### **Proposed (2020)**

The 2020 proposed land use within ¼ mile radius of the station intensifies two primary land uses as shown in **Figure 2.5**. These include commercial uses east of the station and mixed-use development to the southeast of the station.



### **Opportunities**

Significant changes to the 2020 land use plan are not proposed due to the predominately military use in the area. However, if the Navy decides to intensify their land uses it may want to do so within close proximity to this station location. Allowing for a higher intensity of land uses such as offices will be appropriate and certainly transit supportive. Also, the site just south of the proposed station is a storage facility and will be a strong candidate site for additional intensive land uses.

As shown in **Figure 2.5**, significant land use options are not recommended for this station. However, based on the station's general location it will still serve primarily as a park and ride facility while also serving the nearby military facilities.

### ▪ **Access**

Pedestrian access to the surrounding uses should be well defined and direct. Presently the area is not considered very "pedestrian friendly." The area lacks sidewalks and the existing sidewalks are in poor condition. The use of street trees to provide protection to the pedestrian is non-existent. In general the area is very automobile-oriented and the pedestrian environment is not a pleasant experience.

"Front door" type accessibility for surrounding land uses and nearby activity centers to the 8<sup>th</sup> Street Station will be reduced if a park and ride facility is built to accommodate the 510 and 540 patronage.

Future redevelopment could allow for the proposed land uses to be closer to the station creating a more direct pedestrian access. Careful location of proposed parking facilities and incorporating strong pedestrian connections from the station to the surrounding uses should continue to be provided.

The sidewalks on existing streets provide the primary means to access this station and it will be beneficial to improve these connections with a comprehensive streetscape enhancement program as illustrated in **Figure 2.6**. This program will be part of the overall station redevelopment plan and should include at least the following streets leading to the major activity centers:

- Harbor Drive
- 8th Street

Making pedestrian improvements to the area near the 8<sup>th</sup> Street under-crossing at Interstate 5 will be a challenge since the area is relatively narrow. Improvements to this area should concentrate on lighting and improved sidewalks.

Future Red Car and Blue Car service will also need access to the station site from 8<sup>th</sup> Street. The platform for these operations should be off street to allow for better transfer capabilities and to provide a more pleasant wait environment at the station.

### ▪ **8<sup>th</sup> Street Station Issues**

For the proposed 8<sup>th</sup> Street Station the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- Traffic impacts at the 8th Street grade crossing resulting from increases in train frequency require further investigation. There are insufficient forecast data on peak hour vehicular traffic crossing the 510 track to determine the extent to which additional train crossings will increase delay and queue lengths to unacceptable levels. Substantial impacts from increases in delay or queuing will require engineering and implementation of mitigation measures.
- Parking at the 8th Street station is currently at capacity. Provision of parking in a structure (along with off-street blue car platforms) does not represent a substantial engineering challenge. There is land adjacent to the existing train station currently used for surface parking. However, this land appears to be owned by the federal government and its availability requires further investigation.

#### **Environmental Issues**

- Blue car platforms are at the curb on 8<sup>th</sup> Street. While Blue car platform operation seems to be currently acceptable, an investigation prior to substantial increases in Blue car and even future Red Car service at the station will be needed to assure the continued adequacy of these facilities.
- Parking currently operates at capacity at the station. Provision for additional parking at the station prior to implementation of a substantial increase in capacity on the 510 may not be warranted. The 510 is currently operating close to passenger capacity in peak hours. A substantial increase in parking at the 8<sup>th</sup> Street station is likely to attract more riders and exacerbate problems of passenger capacity on the 510. A parking demand analysis will be needed to determine the size of the future parking facility. It may be feasible to use surface parking as an interim measure.
- Additionally, an analysis of the impacts of additional vehicles on streets near the station as a result of parking facility expansion will be necessary. Mitigation measures may be required to maintain traffic service where deterioration is expected as a result of station parking expansion.
- A drainage channel that leads to the San Diego Bay is situated to the north of the proposed location of the parking structure. Future implementation must ensure that this water way is not negatively impacted by the development and that water quality is maintained.

#### **Community Issues**

- Expansion of the parking facility to serve the 510 is proposed on federal property. That property is currently used for surface parking. The displacement of the vehicles currently parking on the site will require investigation.

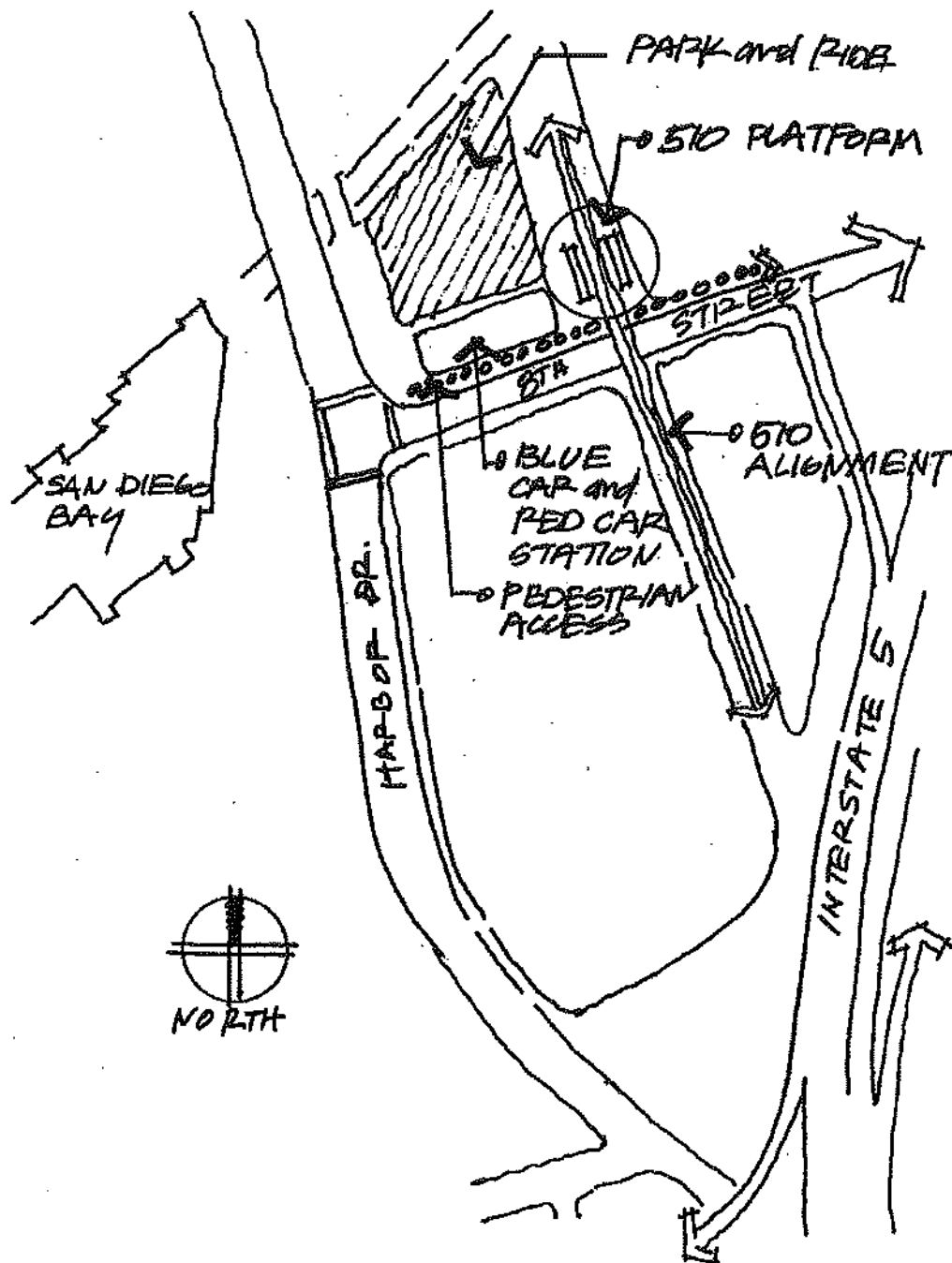


Figure 2.4:  
510- 8<sup>th</sup> Street Station Location



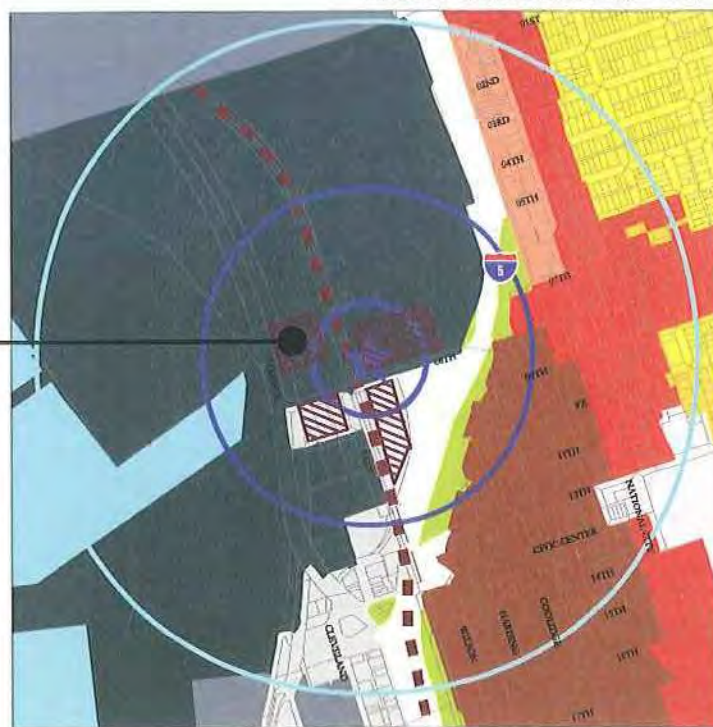
EXISTING LAND USE



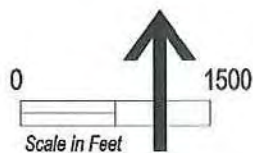
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

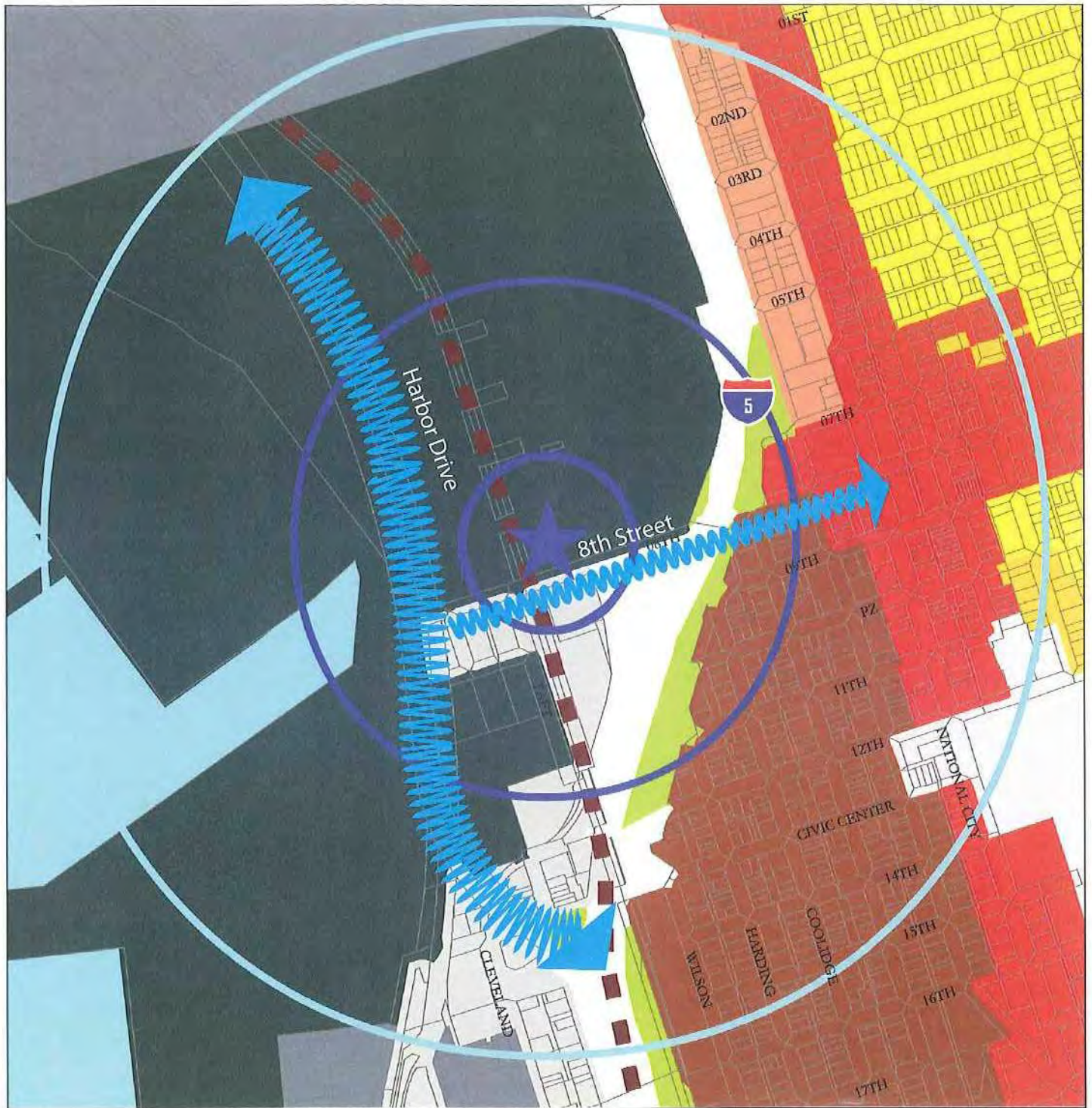


## LAND USE LEGEND

- |                               |                               |                             |
|-------------------------------|-------------------------------|-----------------------------|
| ⊙ Car Station                 | Gov't Office / Civic Centers  | Retail and Strip Commercial |
| — Car Service                 | Religious Facilities          | Office Lo-Rise              |
| 1/4 Mile Buffer               | Libraries                     | Mixed Use                   |
| 1/2 Mile Buffer               | Other Public Services         |                             |
| Single Family Residential     | Military                      |                             |
| Multi Family Residential      | Other School                  |                             |
| Hotel/Motel                   | Parks                         |                             |
| Heavy Industry                | Open Space Reserves/Preserves |                             |
| Industrial Parks              | Landscape Open Space          |                             |
| Rail Station/ Transit Centers | Vacant / Undeveloped          |                             |
| Freeways / Roads              | Water Bodies                  |                             |

**Figure 2.5**  
**510 Alignment**  
**8th Street Station**





**Figure 2.6**  
**510 Alignment**  
**8th Street Station**

## **B. 24<sup>th</sup> Street Station**

The 24<sup>th</sup> Street Station will continue to serve the 510 alignment. Currently the 510 station is a park and ride type facility and provides approximately 154 daily parking spaces. The parking area is located to the immediate east of the station platform. The parking lot typically operates with approximately 70 percent of the lot being full during peak commuter periods. This station is also a transfer hub for numerous Blue Car services including the 601 and the 602.

### ▪ **Right-of-Way Requirements**

The number of passengers boarding at this station is forecasted to increase. Since the existing parking operates at less than capacity, an assessment of latent demand will be necessary to determine the extent to which the existing parking supply will be adequate to serve the future 510 needs. The station will continue to serve as a major "Transit Hub" providing transfer capabilities for the Blue Car service.

The right-of-way requirements for the transit facility will remain within its current "foot-print" and be approximately 1.5 acres in size. The latent parking demand will determine whether the station requires redesign or substantial improvements. If additional parking is required a parking structure constructed within the existing facility foot-print is feasible. The station is shown in **Figure 2.7**.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan (1999) identifies numerous land uses within ¼ mile to ½ mile of the 24<sup>th</sup> Street Station as shown in **Figure 2.8**. Generally speaking the existing land uses consist of a mix of residential, schools, and industrial / office uses.

The station is bordered by an older low density residential development to the northeast. Light industrial uses border the station to the north and adult educational facilities border the station to the south.

#### **Proposed (2020)**

The 2020 proposed land use within ¼ mile radius of the station will intensify (**See Figure 2.7**). The area to the north and northeast of the station will be comprised of mixed-use and commercial land use components as illustrated in **Figure 2.8**. To the southeast, the land use plan illustrates hotel/motel uses along 24<sup>th</sup> Street. West of Interstate 5 there are areas also identified for hotel/motel uses that were previously identified for industrial uses.

#### **Opportunities**

The proposed 2020 land use plan illustrates significant areas for mixed-use opportunities northeast of the station. This amount of area devoted to mixed-use within ¼ and ½ mile of the station provides an increase in transit supportive uses. Although the mix of uses is not known at this time, the flexibility allowed within mixed-used type developments will allow for greater opportunities to be supported by the transit alignment.

Recommendations that should be considered include those that identify other mixed-use opportunities west of Interstate 5 and office use east of the station, as shown in **Figure 2.8**.

▪ **Access**

The continued need for a park and ride facility for the 510 requires that pedestrian access to the surrounding uses be well defined and direct. Careful location of future parking improvements and the incorporation of strong pedestrian connections from the station to the surrounding uses will be needed to encourage "walk-up" riders within a ¼ to ½ mile of the station.

A pedestrian bridge may be appropriate to connect the station to the west side of Interstate 5. This will provide a direct pedestrian connection to the station for uses located on the west side of the freeway. A pedestrian bridge will also eliminate the existing pedestrian route that consists of walking south to 24<sup>th</sup> Street and crossing Interstate 5.

The existing area does not provide a very good "walking environment" from the station to the surrounding neighborhood. The sidewalks on existing streets provide the primary means to access the station and it may be beneficial to improve these connections with a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets and shown in **Figure 2.9**:

- 24th Street
- 22nd Street
- Wilson Avenue
- Marina Way
- Cleveland Avenue

▪ **24<sup>th</sup> Street Station Issues**

The following are possible issues affecting the implementation of improvements at the 24<sup>th</sup> Street station.

**Engineering Issues**

- Additional parking appears to be needed at the site as the current surface parking lot is nearly utilized. Because of development on the surrounding land, a parking structure will be needed for the site to provide additional parking. However, the site is small and patron parking will be displaced during the construction of a parking structure. Interim parking may be necessary to maintain ridership during the course of construction.
- Blue car platforms may also be impacted during construction and adequate provision for these facilities both during and after construction will be required.

**Environmental Issues**

- Parking currently operates at approximately 70 percent of capacity at the station. Provision for additional parking at the station prior to implementation of a substantial increase in capacity on the 510 may not be warranted. The 510 is currently operating close to passenger capacity in peak hours. A substantial increase in parking at the 24<sup>th</sup> Street station is likely to attract more riders and exacerbate problems of passenger capacity of the 510. A parking demand analysis will be needed to determine the size of the future parking facility.
- The increased patronage due to construction of additional parking will result in increased traffic and circulation in the area of the station. Impacts to the residential areas to the north of the station will need to be assessed as well as other roadway impacts on nearby streets and intersections. Any necessary mitigation measures will require engineering and implementation.
- A drainage channel leading to the Sweetwater Marsh National Wildlife Refuge is situated to the northeast and east of the proposed parking structure location. Future implementation should ensure that this waterway is not impacted by the development and that no degradation of water quality at the refuge.
- There are potential visual impacts possible due to construction of the parking structure. These impacts will require investigation and mitigation.
- Noise impacts to the surrounding neighborhood due to increase headways will require further investigation as the alignment is engineered.

**Community Issues**

- Increased traffic resulting from construction of a parking structure at the station may raise objections from residents of the nearby community. Similarly, construction noise may not be well received in the community and therefore require mitigation.



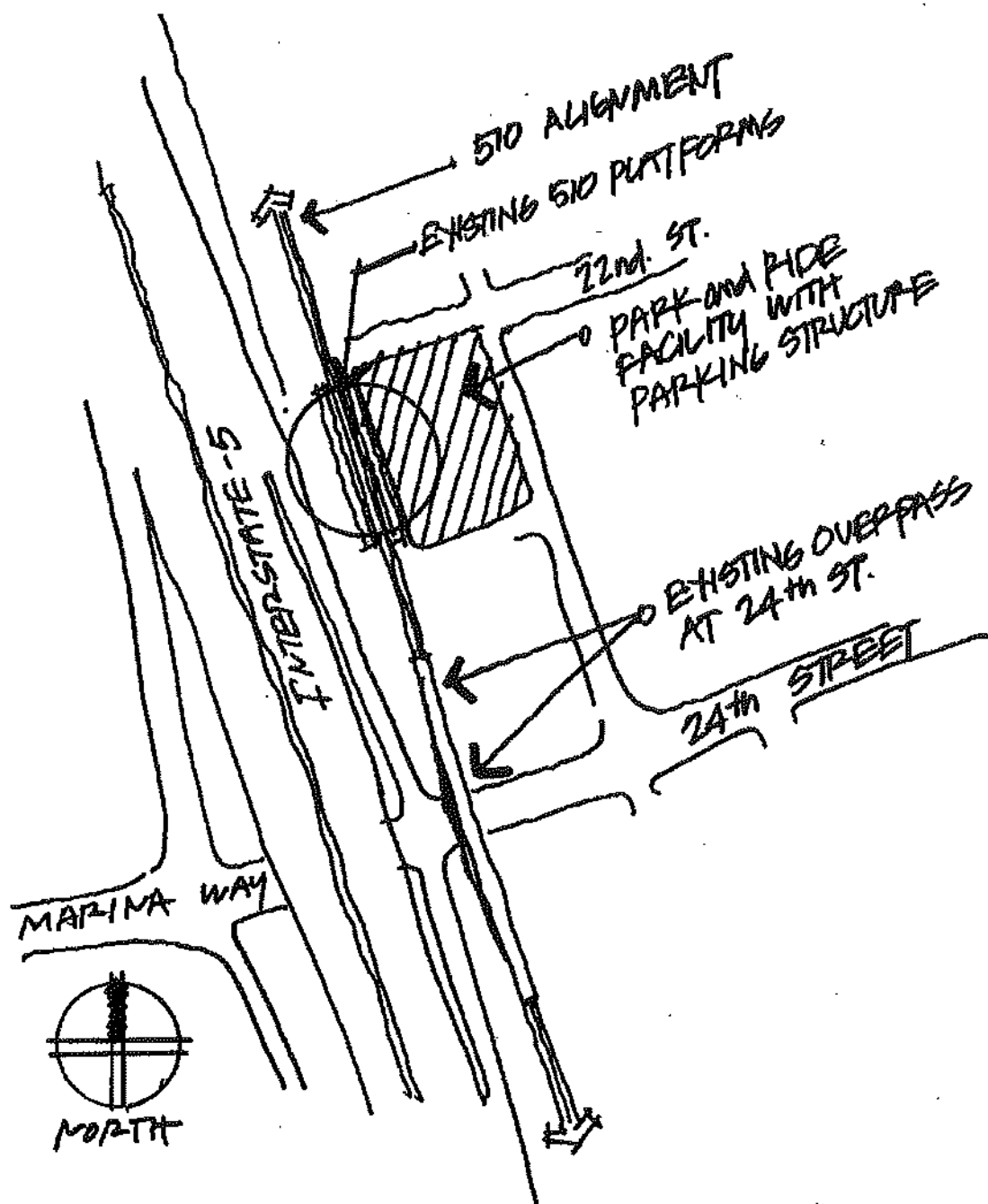


Figure 2.7:  
510- 24<sup>th</sup> Street Station Location



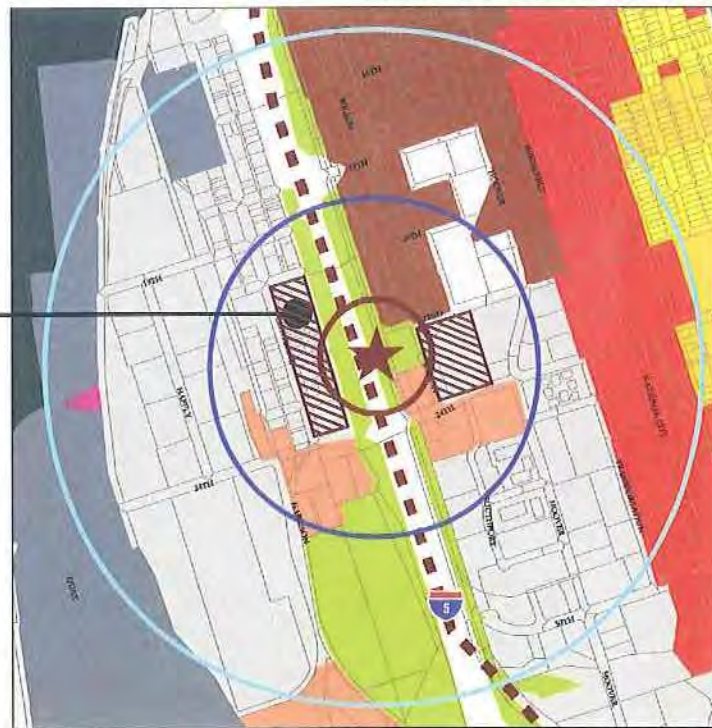
EXISTING LAND USE



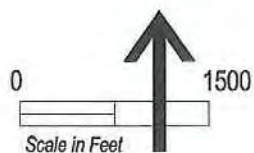
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

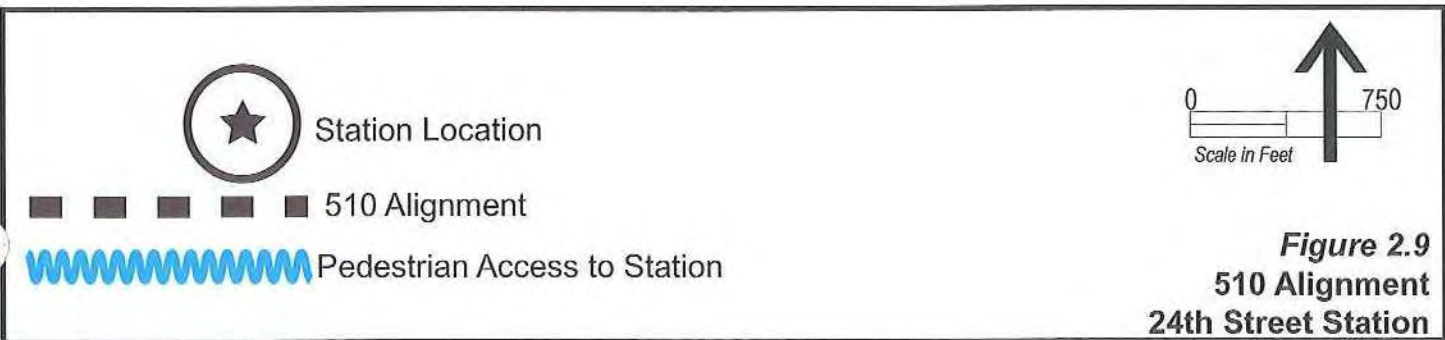


## LAND USE LEGEND

- |                               |                               |                      |
|-------------------------------|-------------------------------|----------------------|
| (*) Car Station               | Other Transportation          | Landscape Open Space |
| - - - Car Service             | Marine Terminal               | Vacant / Undeveloped |
| 1/4 Mile Buffer               | Retail and Strip Commercial   | Hotel/Motel          |
| 1/2 Mile Buffer               | Office Lo-Rise                | Mixed Use            |
| Single Family Residential     | Religious Facilities          | Fire/Police Stations |
| Multi Family Residential      | Other Health Care             |                      |
| Heavy Industry                | Military                      |                      |
| Industrial Parks              | Elementary Schools            |                      |
| Warehousing / Public Storage  | Other School                  |                      |
| Rail Station/ Transit Centers | Parks                         |                      |
| Freeways / Roads              | Open Space Reserves/Preserves |                      |

**Figure 2.8**  
**510 Alignment**  
**24th Street Station**





### **C. E Street (Bayfront) Station**

The E Street Station will also continue to serve the 510 alignment. Presently this 510 station is a park and ride facility and includes a City of Chula Vista Information Center. The station provides approximately 251 daily parking spaces. The parking area is located immediately east of the station platform but is split to the north and south by the information center. The parking lot typically operates near capacity with approximately eighty percent of the lot full during peak commuter periods. This station also serves as a transfer hub for numerous Blue Car services including the 705, 706A, 708, and the 932.

#### ▪ **Right-of-Way Requirements**

The number of passengers boarding at this station is forecasted to increase. Since the existing parking operates near capacity, an assessment of latent demand will be necessary to determine the extent to which the existing parking supply will be adequate for the future.

Grade separation of the E Street crossing may be required since train headways will be extremely short. Grade separation could be either above the grade of E Street or tunneled below. Generally, elevated structures are less expensive than below grade structures and for the purposes of this analysis elevated structure is reviewed. Subsequent analysis will be needed to determine which grade separation option will provide the best solution at this intersection/station. In either case, platform construction immediately adjacent to E Street will minimize additional area for the station improvements as shown in **Figure 2.10**.

The right-of-way requirements for the transit facility may have to expand beyond its current "foot-print" if a grade separated crossing is required at E Street and an at-grade station is desired. This will require the station platform to move south of its current location.

Another consideration for providing a grade separated crossing at E Street is the current trolley operations. Maintaining existing trolley service/operations during construction will be necessary. Developing a plan that allows for continued service in this corridor must be part of the engineering design.

Width in this area appears to be sufficient to accommodate a separate third track for freight trains. This substantially reduces the length of the elevated or tunneled section since light rail grades can be substantially greater than those needed for freight trains.

Assuming a five (5) percent grade for the trolley line and a 25-foot track elevation, the rise in grade requires approximately 500 linear feet at each end. The fully elevated section of 1,000-feet should be of sufficient length to cross E Street. If the station is located south of the elevated section as illustrated in **Figure 2.10A**, additional land will be required at the station itself, but the length of the elevated section is minimized. The station could be further from Blue Car transfer area and parking facilities depending on final station design.

If the station platform is elevated above the current station or placed over E Street (as illustrated in **Figure 2.10B**) no additional land will be required. However, the length of the elevated section will increase to accommodate the elevated station. It should be noted that as much as 1,400-feet of elevated track will be necessary at this location. Final resolution on the type of grade separation at this station location will be based on future and more detail analysis that is beyond the scope of this study.

An elevated structure in this location could create a visual barrier to the bay and could be considered unsightly if poorly designed. However, a quality design could be used to create a formal entrance and serve as a "gateway statement" to the Bayfront Redevelopment area and to Chula Vista's downtown. Bay views from the station platforms could also increase the quality of the waiting environment at the station.

The E Street station will continue to serve as a major "Transit Hub" providing transfer capabilities for the Blue Car service. Redesign and improvements to the station's transfer area and park and ride facilities will be contingent on whether additional parking is needed and the number of Blue Car services that will be required. Based on current redevelopment plans for the area surrounding the E Street station, location of the station south of the elevated track is preferred. However, most improvements should be accommodated within the existing "foot-print" of the station, except for the station itself if it is relocated south of the elevated track.

#### ▪ **Land Use Integration**

##### ***Existing (1999)***

The existing land use plan (1999) identifies numerous land uses associated within ¼ mile to ½ mile of the E Street station, as shown in **Figure 2.11**. Generally speaking the existing land uses consist of a mix of residential, schools, and commercial uses.

The commercial uses consist of hotels, retail, and office uses all within close proximity to the station. West of Interstate 5 the primary land use is the Chula Vista Bayfront. Although the Chula Vista Midbayfront is currently undeveloped it is being planned for future growth. The remainder of the Bayfront area to the south of the Midbayfront is partially developed and the San Diego Unified Port District and the City of Chula Vista are engaged in a joint process to develop a Master Plan for this area.

##### ***Proposed (2020)***

The 2020 proposed land use within ¼ or ½ mile radius east of the station shows an increase in commercial and office uses and an intensification of residential uses as illustrated in Figure 2.11. An increase in commercial and residential use is planned for the area west of the station and Interstate 5, particularly within the Chula Vista Bayfront area.

##### ***Opportunities***

The land use opportunities recommended for this station will occur adjacent to the station and on the east side of Interstate 5. Mixed-use options both north and south of the station will be appropriate and add to the intensification of uses to ensure transit supportive capabilities.



The sites identified near the station will be predominately residential with commercial, civic/cultural, and office uses being supportive or secondary uses. Locations of these mixed-use areas are shown in **Figure 2.11**. The E Street Station should experience significant walk-up ridership as the land use intensifies at the Bayfront and mixed use projects increase.

▪ **Access**

The continued need for a park and ride facility and increased land use intensity around the 510 will require well defined and direct pedestrian access to the station platforms from the surrounding uses. Careful location of future parking improvements at the station and the incorporation of strong pedestrian connections from the station to the surrounding land uses will be needed to encourage "walk-up" riders within a ¼ to ½ mile of the station.

The E Street Station is located near the gateway to the Chula Vista Bayfront. Providing pedestrian access from the station to the bay front is strongly recommended. Currently the area is heavily congested with traffic (both vehicular and transit) and is not a pleasant pedestrian or walking environment. The pedestrian connection to the bay front should be carefully designed to encourage pedestrian movement.

Access to the station is provided by the existing sidewalks and pedestrian street crossings with multiple curb cuts. It may be beneficial to improve these pedestrian connections and crossings with a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets as illustrated in **Figure 2.12**:

- E Street
- Woodlawn Avenue
- Jefferson Avenue
- Bay Boulevard

▪ **E Street (Bayfront) Station Issues**

For the proposed E Street Station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- Increased frequency of trains will result in reduced vehicular capacity at the E Street grade crossing. This heavily trafficked crossing is likely to experience unacceptable traffic service. Grade separation of the street and transit line will eliminate traffic congestion problems. Detailed traffic analysis at the crossing is necessary to determine at what congestion level of vehicular and transit traffic will warrant grade separation. The guidelines for separation policies and procedure are provided in the Appendix.
- In this study grade separation will be accomplished by raising the transit rail line above the existing street grade. This will require from 900 to 1420 feet of aerial

guideway and associated utility, track, catenary, landscaping, and fencing improvements. The E Street station could be elevated above E Street at its currently location, or it could be relocated immediately south of the elevated section. However, subsequent analysis will be needed to make the final determination if above or below grade separation should be used.

- The elevated track in the vicinity of E Street will be located above the existing track. Construction of the elevated section will require temporary shoofly track and supplemental infrastructure in order to maintain service during construction of the elevated section. There appears to be sufficient right-of-way available in this area to construct two additional tracks at-grade immediately east of the two existing 510 tracks. However, this will require further detailed investigation.
- Of the two additional at-grade tracks, the more easterly will be a temporary shoofly track for northbound 510 service. The more westerly of the two additional tracks will be a permanent freight track with temporary catenary to serve the southbound 510 during construction of the elevated sections.
- Freight service will continue at-grade through the area after completion of the elevated 510 track. Freight service will be maintained at-grade because the length of the elevated structure necessary to accommodate freight trains will increase substantially, as will the weight bearing capacity. Freight service is only operated at night when traffic service at grade crossings is not a substantial issue. Similarly, conflicts between freight trains and 510 passengers in the vicinity of the station will be minimized due to the hours of operation of freight service. Nonetheless, safety measures will be required.
- Warning lights and gates at the E Street crossing will require repositioning to serve the new freight and temporary shoofly crossings. Some structures and other facilities at the train station site may require demolition to accommodate the two additional tracks east of the existing tracks. Detailed surveying and other information are required to more fully evaluate the feasibility and impacts of construction of the additional two tracks in these areas.
- While detailed traffic analysis at the crossing is necessary to determine at what level of vehicular and transit traffic grade separation is warranted, increased train frequency makes the likelihood of grade separation somewhat stronger.
- Structure parking will be needed at this station. No unusual engineering challenges are anticipated. The project should be coordinated with elevation of the track across E Street and relocation of the station. Construction of parking facilities and relocation of the station as part of elevation of the track over E Street, will require relocation of the Blue Car platforms.

### ***Environmental Issues***

- As noted above, detailed traffic analysis at the E Street grade crossing will be needed to determine at what level of vehicular and transit traffic grade separation is warranted. Peak hour traffic turning counts, channelization, signalization, train frequency, pedestrian counts, and other data are necessary to fully determine the amount of delay experienced by motorists at these rail crossings. Forecasts of increases in street and rail traffic are necessary to determine at what point in time motorists will begin to experience unacceptable amounts of delay in crossing the

tracks. Congestion at these crossings, and their analysis, are exacerbated by the presence of signalized intersections, high bus and pedestrian volumes, and freeway ramps in close proximity to the grade crossing.

- Any increase in train frequency will increase motorist delay. However, a complete analysis is necessary to determine the amount by which delay will increase and whether the current and forecast amounts of delay are unacceptable.
- Provision for additional parking at the station prior to implementation of a substantial increase in capacity on the 510 may not be warranted. The 510 is currently operating close to passenger capacity in peak hours. A substantial increase in parking at the station is likely to attract more riders and exacerbate problems of passenger capacity on the 510. A parking demand analysis will be needed to determine the size of the future parking facility. Increases in traffic resulting from the provision of additional parking at the station site will also require investigation.
- Noise and vibration are potential impacts of the elevated section of track crossing E Street. Because of the proximity of the tracks to noise-sensitive sites, increases in noise may be a significant impact requiring mitigation.
- The proximity of the tracks to structures along the right-of-way, suggests that potential structural impacts from additional vibration may be significant. A thorough assessment of potential noise and vibration impacts will be required as part of track elevation.
- Elevation of the track in the vicinity of E Street may have a substantial visual impact. A more thorough assessment of potential visual impacts will be required as part of this project.
- Track elevation could be used to create entrance gateways or other improvements to the community if properly designed. A thorough assessment of potential visual impacts will be required as part of track elevation.

### **Community Issues**

- Traffic impacts on the surrounding community resulting from increasing the supply of parking at the station will require further investigation and potential mitigation. Similarly, increases in lighting, noise, and other potentially negative impacts on the nearby community will require further investigation.
- The Community may object to an above-grade station at this location due to the visual impacts to the San Diego Bay.



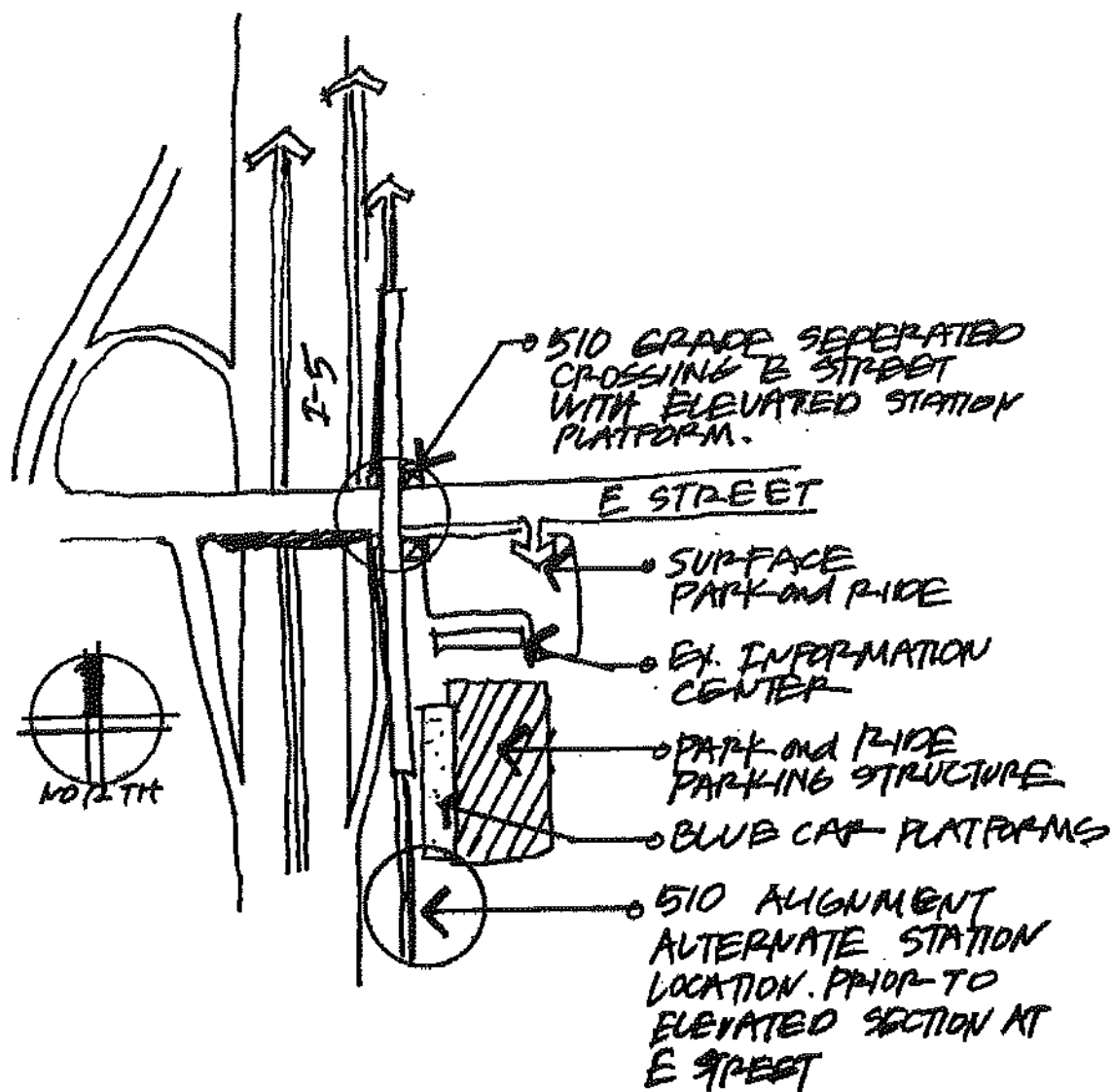


Figure 2.10:  
510- E Street Station Location

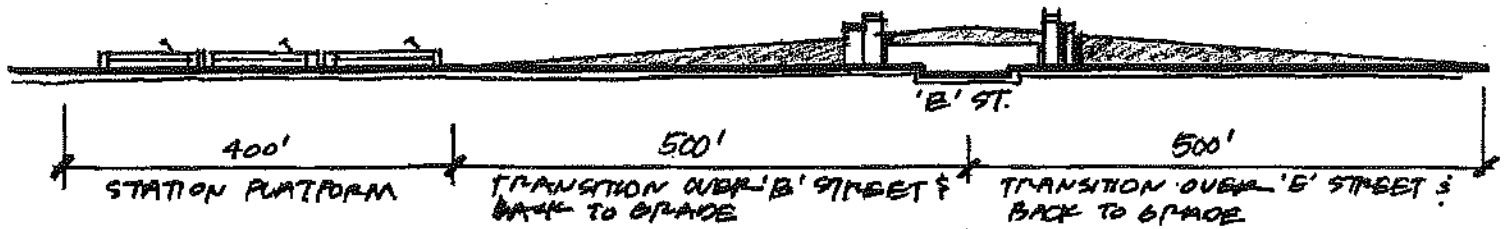


Figure 2.10A:  
510- E Street Station Platform South of Structure

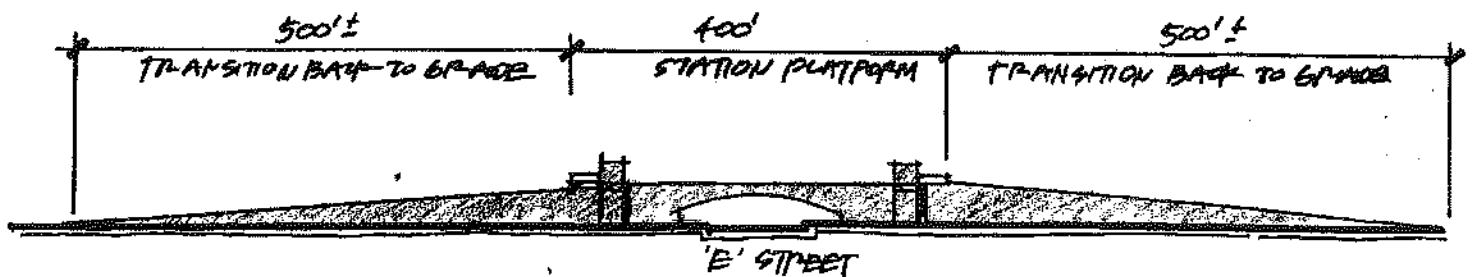


Figure 2.10B:  
510- E Street Station Platform on Structure



EXISTING LAND USE

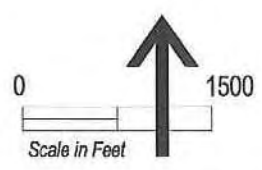


2020 PLANNED LAND USE

Mixed Use Opportunities  
■ Office (Primary)  
■ Commercial (Secondary)



OPPORTUNITIES

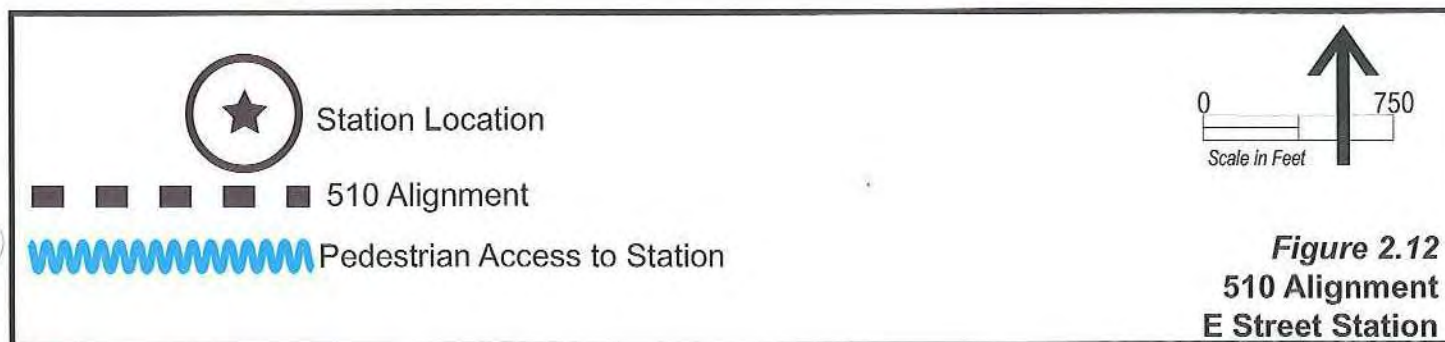


**LAND USE LEGEND**

- |                           |                               |                      |
|---------------------------|-------------------------------|----------------------|
| ★ Car Station             | Industrial Parks              | Parks                |
| --- Car Service           | Rail Station/ Transit Centers | Vacant / Undeveloped |
| 1/4 Mile Buffer           | Freeways / Roads              | Water Bodies         |
| 1/2 Mile Buffer           | Communications / Utilities    |                      |
| Single Family Residential | Other Transportation          |                      |
| Multi Family Residential  | Retail and Strip Commercial   |                      |
| Mobile Home Parks         | Office Lo-Rise                |                      |
| Other Group Quarters      | Religious Facilities          |                      |
| Hotel/Motel               | Elementary Schools            |                      |
| Heavy Industry            | Open Space Reserves/Preserves |                      |

**Figure 2.11**  
**510 Alignment**  
**E Street Station**







## **D. H Street Station**

The H Street Station will serve the 510, the future Red Car 627 alignment, and the 540 alignment in some capacity. Currently the 510 station provides 304 daily parking spaces. The surface parking lot typically operates near capacity with approximately 90 percent of the lot full during peak commuter periods.

This station serves as a major transfer hub for numerous Blue Car services including the 701, 702, 703, 704, 706, 706A, 707, and 709 routes. Platforms for the Blue Car services are located off street immediately south of the parking lot. This platform area also serves as a turn around area for the Blue Cars lines accessing H Street.

### ▪ **Right-of-Way Requirements**

Additional right-of-way may be required for the continued operation of the 510 station if grade separated improvements across H Street and at-grade station platforms are desired. These improvements will require that the platforms move north of their current location. However, this will locate the stations adjacent to a multi-family residential area, make transfers to Blue Cars require either more walking or relocation of Blue Car platforms away from H Street, and reduce the directness of transfers between the 510 and 540 when the latter route is constructed. Construction of the H Street station above H Street or above its current location immediately north of H Street is therefore preferred.

Grade separation across H Street may be required if train headways are to be substantially reduced. Grade separation could be either above the grade of H Street or tunneled below. Generally, elevated structures are less expensive than below grade structure and for the purpose of this analysis an elevated structure is reviewed. Subsequent analysis will be needed to determine which grade separation option will provide the best solution at this intersection/station. In either case, platform construction immediately adjacent to H Street will minimize the need to acquire additional right-of-way for an at-grade platform.

Another consideration for providing a grade separated crossing at H Street is the current trolley operations. Maintaining existing trolley service/operations during construction will be necessary. Developing a plan that allows for continued service in this corridor must be part of the engineering design.

Width in this area appears to be sufficient to provide a separate third track for freight trains. This substantially reduces the length of the elevated or tunneled section since light rail grades can be of substantially greater than those for freight trains.

Assuming a five (5) percent grade for the trolley line and a 25-foot track elevation, the rise in grade will require approximately 500 linear feet at each end. The fully elevated section will be of sufficient length to cross H Street and provide station platforms. Assuming a platform length of 400 feet over H Street, the minimum section above or below grade will be approximately 1,400 feet.

The recommended station location for the 510 alignment is on a major new structure above the grade of H Street. Connecting this structure and the proposed 540 elevated structure (see *Chapter 3*) will integrate the two stations and provide for

better access to the park and ride facility and the Blue Car transfer area. For this reason, an elevated section over H Street will be preferred over a below grade separation and is illustrated in **Figure 2.13**.

While the existing parking lot is generally near or at capacity during weekdays, construction of additional parking facilities prior to implementation capacity improvements on the 510. Additional parking could be accommodated in a new parking structure and still remain within the station's existing "footprint."

#### ▪ **Land Use Integration**

##### **Existing (1999)**

The existing land use plan (1999) illustrates a variety of residential and commercial uses on the east side of I-5 and is shown in **Figure 2.14**. To the west of Interstate 5 the uses are predominately industrial and recreational associated with the bay front.

The land east of the trolley tracks and north and south of H Street consists of residential uses, including some garden apartment complexes. The land west of Interstate 5 is comprised of industrial uses and the Chula Vista Marina.

##### **Proposed (2020)**

The 2020 proposed land use within ¼ and ½ mile radius of the station show an increase in commercial development and a replacement of residential uses with office uses north of the existing station and adjacent to Interstate 5, as shown in **Figure 2.14**. On the west side of Interstate 5 the major land use changes include an increase of industrial uses and a decrease of heavy industrial uses and increase of commercial uses proposed at or near the Marina.

##### **Opportunities**

It is recommended that mixed-use development opportunities occur closer to the proposed 510 station as shown in **Figure 2.14**. Mixed-use development could occur south of H Street on the east side of I-5. Another opportunity for land use intensification will be the creation of office type uses on the west side of Interstate 5 both north and south of H Street. The addition of mixed-use and office options will provide for additional transit supportive uses. For these mixed-use opportunities, it is recommended that office use be dominant near the freeway with commercial and residential uses being supportive and/or secondary uses. For development opportunities located away from the freeway, residential use will be dominant with commercial and office uses being secondary.

#### ▪ **Access**

Access to the 510 H Street Station will require significant improvements to ensure that passengers on either side of the interstate can reach the station. The station's parking area and Blue Car transfer area is within walking distance of the H Street Station and has minimal obstacles in between. However, pedestrians accessing the station from across the interstate or from nearby neighborhoods will encounter numerous obstacles. These obstacles include crossings at the Interstate 5 on/off ramps, crossings at existing rail lines and the busy travel lanes of H Street.

In general the area is extremely congested especially during peak traffic periods. Numerous turn movements, high traffic volumes and narrow sidewalks attribute to this congestion. Special consideration should be given to streetscape enhancements that will encourage pedestrian movement from the perimeter of the 510 station to the surrounding neighborhoods. As a minimum the pedestrian access on H Street should be wide, pleasant and provide a sense of safety.

The sidewalks on existing streets that provide station accessibility will benefit from a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets and illustrated in **Figure 2.15**:

- H Street and H Street Overpass at Interstate 5
- Woodlawn Avenue
- Oaklawn Avenue
- Jefferson Avenue
- Bay Boulevard

#### ▪ **H Street Station Issues**

For the proposed H Street Station the following are possible issues affecting the implementation of station improvements.

##### **Engineering Issues**

- Increased frequency of trains will result in reduced vehicular capacity at the H Street grade crossing. This heavily trafficked crossing is likely to experience unacceptable traffic service. Grade separation of the street and transit line will eliminate traffic congestion problems. Detailed traffic analysis at the crossing is necessary to determine at what congestion level vehicular and transit traffic is needed to warrant grade separation.
- In this study grade separation will be accomplished by raising the transit rail line above the existing street grade. This will require approximately 1,300 feet of aerial guideway and associated utility, track, catenary, landscaping, and fencing improvements. The H Street station platforms will be elevated to the level of the tracks requiring construction of elevators and stairs for access. However, subsequent analysis will be needed to make the final determination if above or below grade separation should be used.
- The elevated track in the vicinity of H Street will be located above the existing track. Construction of the elevated section will require temporary shoofly track and supplemental infrastructure in order to maintain service during construction of the elevated section. There appears to be sufficient right-of-way available in this area to construct two additional tracks at-grade immediately east of the two existing 510 tracks. However, this will require further detailed investigation.
- Of the two additional at-grade tracks, the more easterly will be a temporary shoofly track for northbound 510 service. The more westerly of the two additional

tracks will be a permanent freight track with temporary catenary to serve the southbound 510 during construction of the elevated sections.

- Freight service will continue at-grade through the area after completion of the elevated 510 track. Freight service will be maintained at-grade because the length of the elevated structure necessary to accommodate freight trains will increase substantially, as will the weight bearing capacity. Freight service is only operated at night when traffic service at grade crossings is not a substantial issue. Similarly, conflicts between freight trains and 510 passengers in the vicinity of the station will be minimized due to the hours of operation of freight service. Nonetheless, safety measures will be required.
- Warning lights and gates at the H Street crossing will require repositioning to serve the new freight and temporary shoofly crossings. Some structures and other facilities at the train station site may require demolition to accommodate the two additional tracks east of the existing tracks. Detailed surveying and other information are required to more fully evaluate the feasibility and impacts of construction of the additional two tracks in these areas.
- While detailed traffic analysis at the crossing is necessary to determine at what level of vehicular and transit traffic grade separation is warranted, increased train frequency makes the likelihood of grade separation somewhat stronger.
- Structure parking will be needed at this station. Maintenance of parking and Blue Car platforms during construction of additional parking facilities and track elevation will require coordination and represent substantial engineering challenges. Construction of parking facilities and elevation of the station as part of elevation of the track over H Street will require relocation of the Blue Car platforms.

#### **Environmental Issues**

- As noted above, detailed traffic analysis at the H Street grade crossing will be needed to determine at what level of vehicular and transit traffic grade separation is warranted. Peak hour traffic turning counts, channelization, signalization, train frequency, pedestrian counts, and other data are necessary to fully determine the amount of delay experienced by motorists at these rail crossings. Forecasts of increases in street and rail traffic are necessary to determine at what point in time motorists will begin to experience unacceptable amounts of delay in crossing the tracks. Congestion at these crossings, and their analysis, are exacerbated by the presence of signalized intersections, high bus and pedestrian volumes, and freeway ramps in close proximity to the grade crossing.
- Any increase in train frequency will increase motorist delay. However, a complete analysis is necessary to determine the amount by which delay will increase and whether the current and forecast amounts of delay are unacceptable.
- Provision for additional parking at the station prior to implementation of a substantial increase in capacity on the 510 may not be warranted. The 510 is currently operating close to passenger capacity in peak hours. A substantial increase in parking at the station is likely to attract more riders and exacerbate problems of passenger capacity on the 510. A parking demand analysis will be needed to determine the size of the future parking facility. Increases in traffic



resulting from the construction of additional parking at the station site will also require investigation.

- Noise and vibration are potential impacts of the elevated section of track crossing H Street. Because of the proximity of the tracks to noise-sensitive sites, increases in noise may be a significant impact requiring mitigation.
- The proximity of the tracks to structures along the right-of-way, suggests that potential structural impacts from additional vibration may be significant. A thorough assessment of potential noise and vibration impacts will be required as part of track elevation.
- Elevation of the track in the vicinity of H Street may have a substantial visual impact. A more thorough assessment of potential visual impacts will be required as part of this project.
- Track elevation could be used to create entrance gateways or other improvements to the community if properly designed. A thorough assessment of potential visual impacts will be required as part of track elevation.

#### **Community Issues**

- Traffic impacts on the surrounding community resulting from increasing the supply of parking at the station will require further investigation and potential mitigation. Similarly, increases in lighting, noise, and other potentially negative impacts on the nearby community will require further investigation.
- The Community may object to an above-grade section at this location due to the visual impacts.

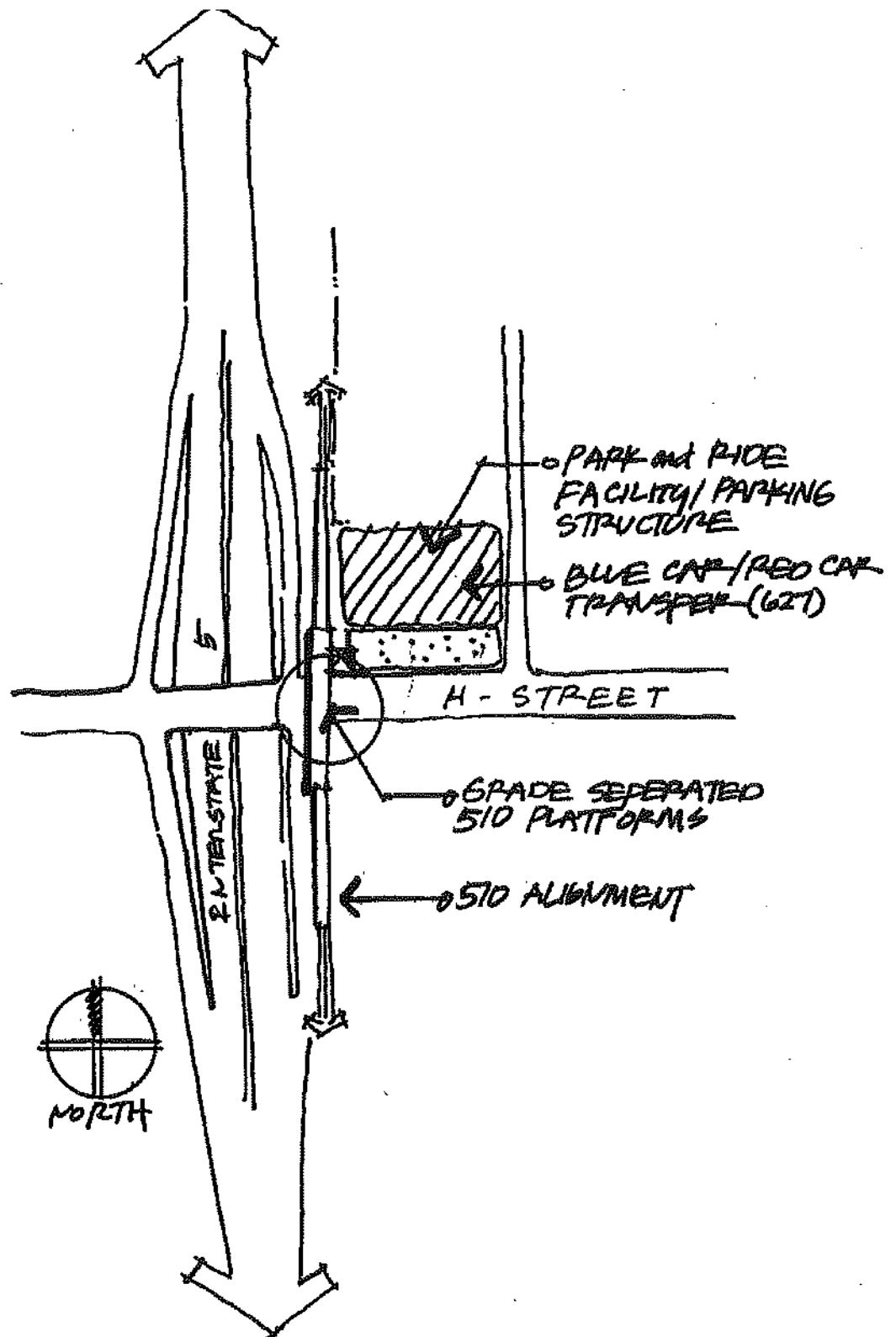


Figure 2.13:  
510- H Street Station Location

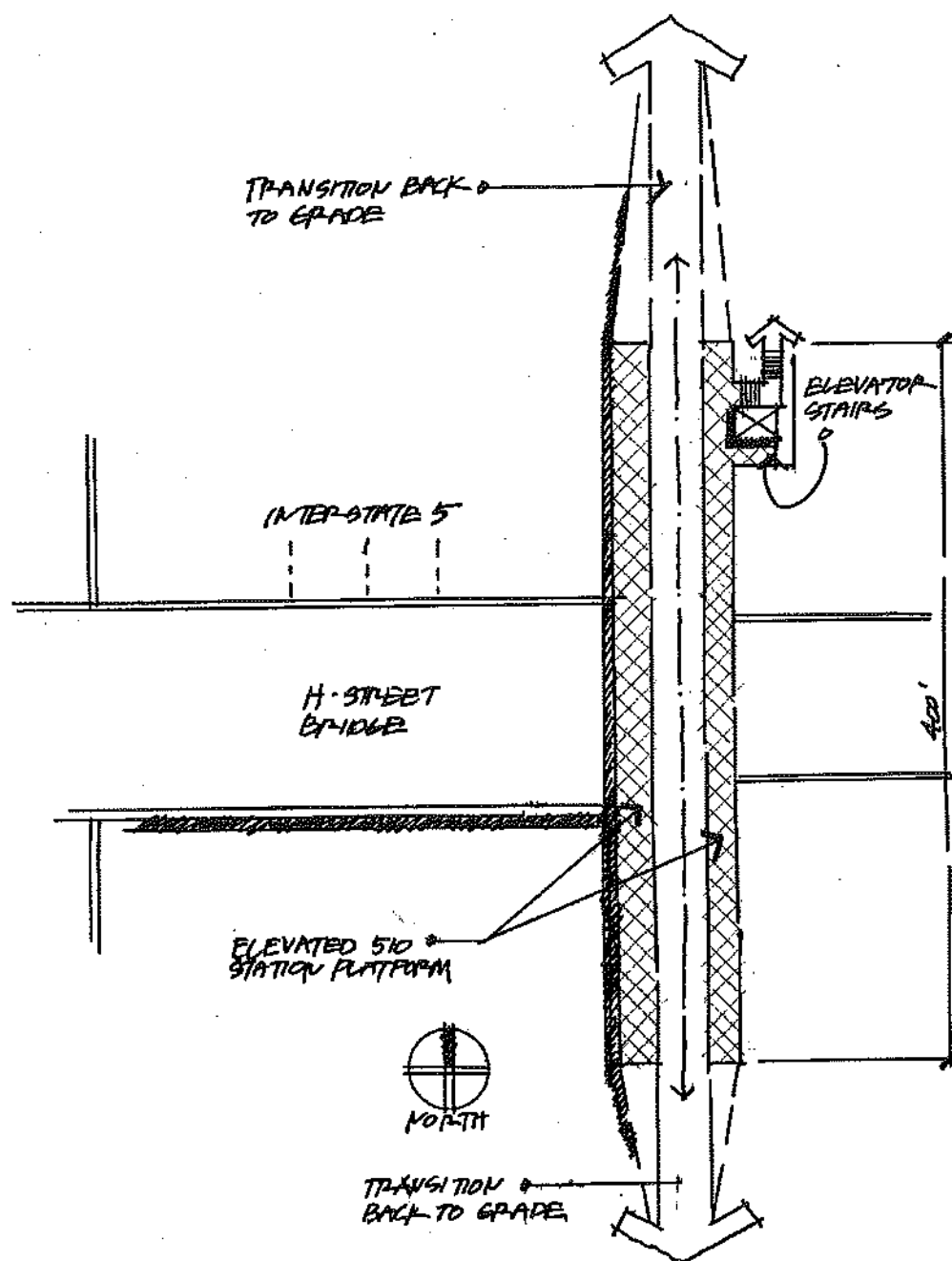


Figure 2.13A:  
510- H Street Station Design



EXISTING LAND USE



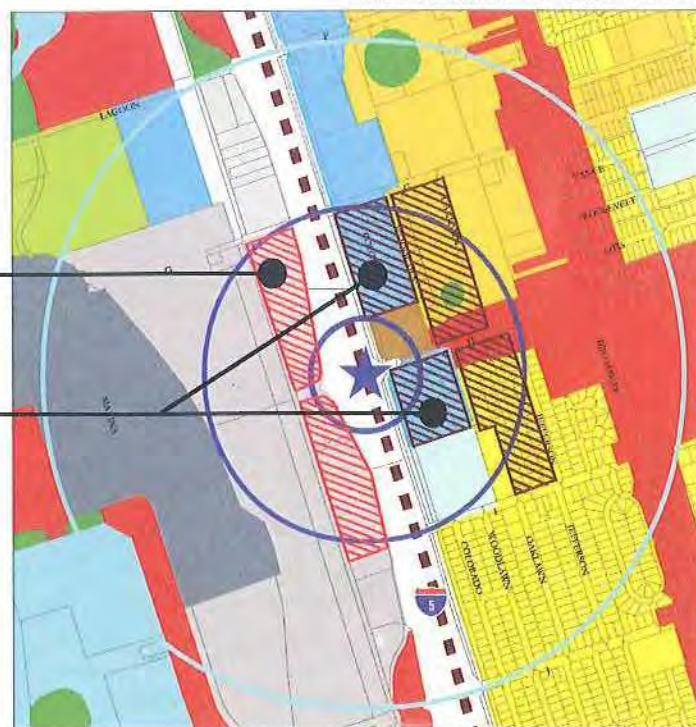
2020 PLANNED LAND USE

## Mixed Use Opportunities

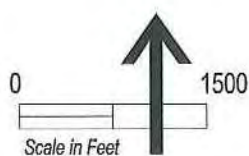
- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES

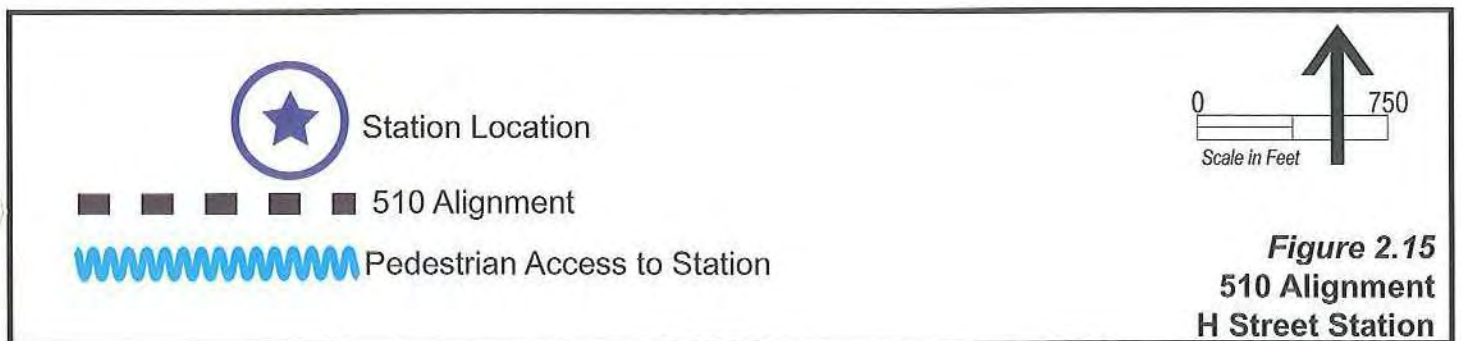
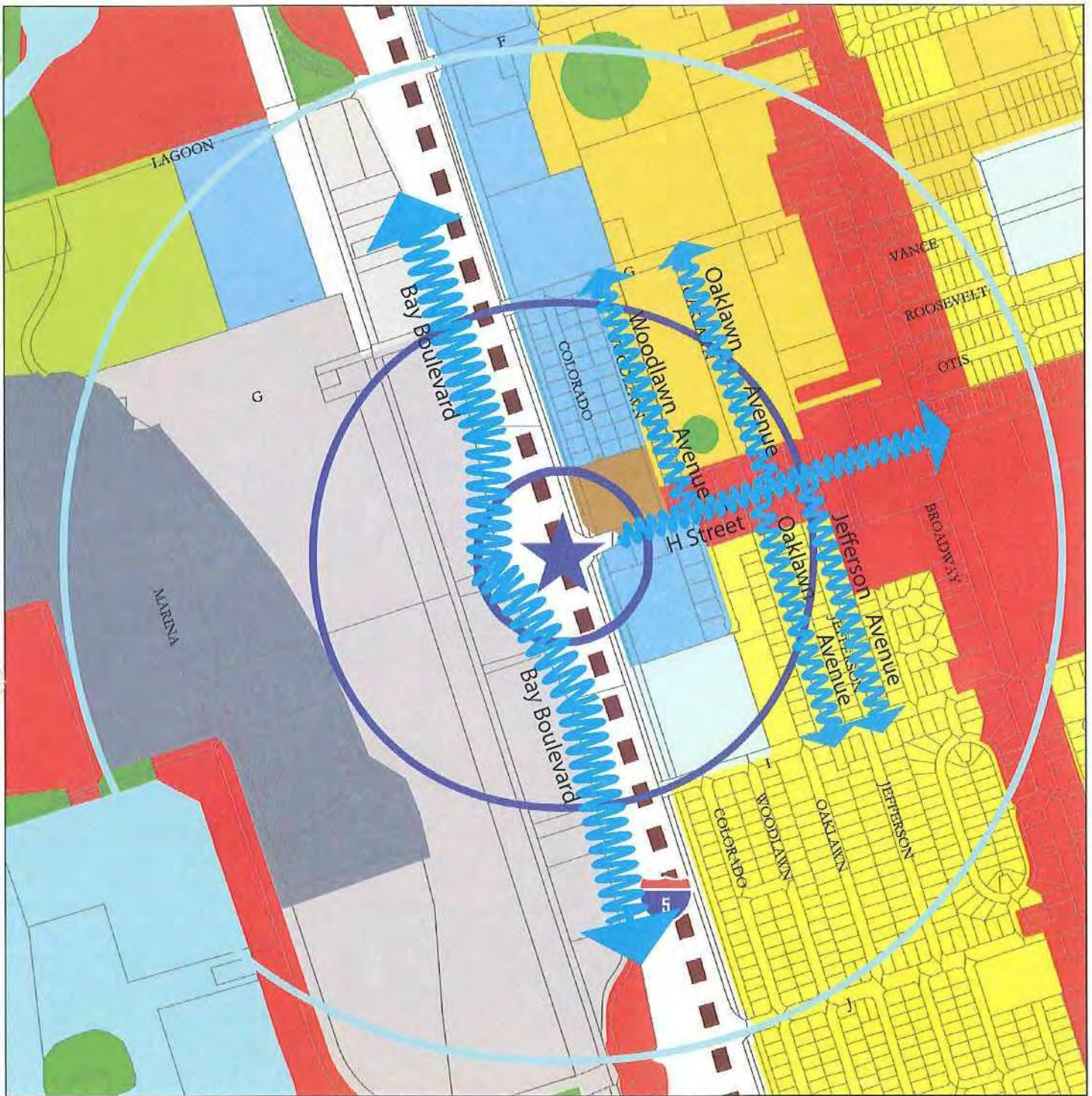


## LAND USE LEGEND

- |                             |                                 |                                 |
|-----------------------------|---------------------------------|---------------------------------|
| ⊙ Car Station               | ■ Rail Station/ Transit Centers | □ Vacant / Undeveloped          |
| — Car Service               | □ Freeways / Roads              | □ Water Bodies                  |
| □ 1/4 Mile Buffer           | ■ Communications / Utilities    | □ Open Space Reserves/Preserves |
| □ 1/2 Mile Buffer           | ■ Retail and Strip Commercial   |                                 |
| ■ Single Family Residential | ■ Office Lo-Rise                |                                 |
| ■ Multi Family Residential  | ■ Religious Facilities          |                                 |
| ■ Mobile Home Parks         | ■ Elementary Schools            |                                 |
| ■ Hotel/Motel               | ■ Marinas                       |                                 |
| ■ Heavy Industry            | ■ Other Recreation              |                                 |
| ■ Industrial Parks          | ■ Parks                         |                                 |

**Figure 2.14**  
**510 Alignment**  
**H Street Station**





### **E. Palomar Street and Industrial Street Station**

The Palomar Street Station will continue to serve the 510 and also the new RC1 alignment identified as a Tier One route. Currently the Palomar Street Station is a park and ride facility with 230 parking spaces available for daily parking. The parking area is located immediately east of the station platform. The parking lot associated with the station typically operates at approximately forty to fifty percent capacity. This station also serves as a transfer hub for the numerous Blue Car lines serving the station including the 701, 702, 703, and the 712 routes.

#### ▪ **Right of Way Requirements**

Parking should be adequate to serve the 510 in the near term, since the existing parking operates at less than half of its capacity. The 3400 daily boardings forecasted for 2020 do not include riders transferring from the RC-1. However, these riders will not require parking since they will be arriving at the station on the RC-1. It is likely that some ridership on the RC-1 outbound from the station will park at the station and the excess parking capacity appears sufficient to accommodate such demand.

A station redesign will be needed in order to accommodate the RC-1 service, the transfer capabilities of the Blue Car service and continued service of the 510, thus allowing the station to continue to serve as a major "Transit Hub." However, the right of way requirements for the transit facility redesign should be able to remain within the station's current "foot-print."

The platforms serving the 510 will be affected by the redesign of a grade separated crossing at Palomar Street if constructed. The platforms for the 510 will have to be relocated south in order to be at-grade. Another alternative will be to construct the waiting area platform above grade thereby eliminating the need to relocate the platforms and acquire additional right-of-way as illustrated in **Figure 2.16**. Final design of the grade separated crossing will require more detailed analysis than provided in the scope of this study.

Improvements at the station will also be needed to accommodate the RC-1 and the Blue Car service platform, and any new routes that might ultimately serve this station. It should also be noted that if the RC-1 route is implemented prior to implementation of capacity improvements on the 510, the RC-1 may exacerbate operational problems on the 510. Prior to implementation of the 510 sufficient passenger capacity must be available to serve riders transferring from the RC 1 route.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

The existing land use plan (1999) identifies numerous land uses within ¼ mile to ½ mile of the station as shown in **Figure 2.17**. The land use plan illustrates a mix of residential and commercial uses with industrial uses on the outer edge. Generally speaking the existing uses consist of low-density residential development to the west of the station, retail commercial development to the east and northeast, and light industrial uses to the southeast. A utility easement lies directly to the east. The land

uses west of Interstate 5 consist of light industrial/extraction uses (salt production) interspersed with residential development.

#### ***Proposed (2020)***

The 2020 proposed land uses within ¼ mile radius of the station will intensify the commercial and industrial uses on both sides of the station as illustrated in **Figure 2.17**. On the west side of Interstate 5 industrial uses will replace residential and mobile home type uses.

#### ***Opportunities***

It is recommended that mixed-use opportunities occur near the Palomar Street Station as shown in **Figure 2.17**. The mixed-use areas should all be located east of Interstate 5 and in close proximity of the station.

For the mixed-use area west of Industrial Avenue and south of Palomar Street it is recommended that residential be the dominant land use with commercial and office being secondary. The mixed-use area north of Palomar and east of Industrial Boulevard could consist of predominately commercial uses with secondary office and residential uses supporting the development.

#### ▪ **Access**

Pedestrian accessibility from the 510 Palomar Street Station to the parking lots and Blue Car service platforms is fairly direct with few obstacles. However, significant improvements are needed to encourage potential riders from the surrounding residential areas to walk to the station.

Sidewalks on the existing streets provide primary station accessibility from the surrounding neighborhoods and will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Palomar Street should be wide, pleasant and provide a sense of safety. This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 2.18**:

- Palomar Street
- Industrial Boulevard
- Broadway
- Dorothy Street
- Anita Street
- Oxford Street

Another opportunity for station pedestrian access is to create a pedestrian way within the utility easement south of the Palomar Street. This wide easement is identified as an open space feature and could incorporate a walkway or path linking the neighborhoods east of the station to the 510 Palomar Street Station.

---

▪ **Palomar Street Station Issues**

For the Palomar Street station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- Traffic impacts at the Palomar Street grade crossing resulting from increases in train frequency require further investigation. There are insufficient forecast data on peak hour vehicular traffic crossing the 510 track to determine the extent to which additional train crossings will increase delay and queue lengths to unacceptable levels.
- Substantial impacts from increases in delay or queue will require engineering and implementation of mitigation measures, including the potential for a grade separated crossing.

***Environmental Issues***

- The station has available parking capacity. Park-and-ride activity may increase at the station in response to increased train frequency and growth. The additional vehicular traffic may negatively impact area streets and roads. Increases in train frequency will increase noise and vibration and may negatively impact nearby sensitive land uses.

***Community Issues***

- Increases in vehicular traffic accessing the station and noise impacts are potential community impacts requiring further investigation.



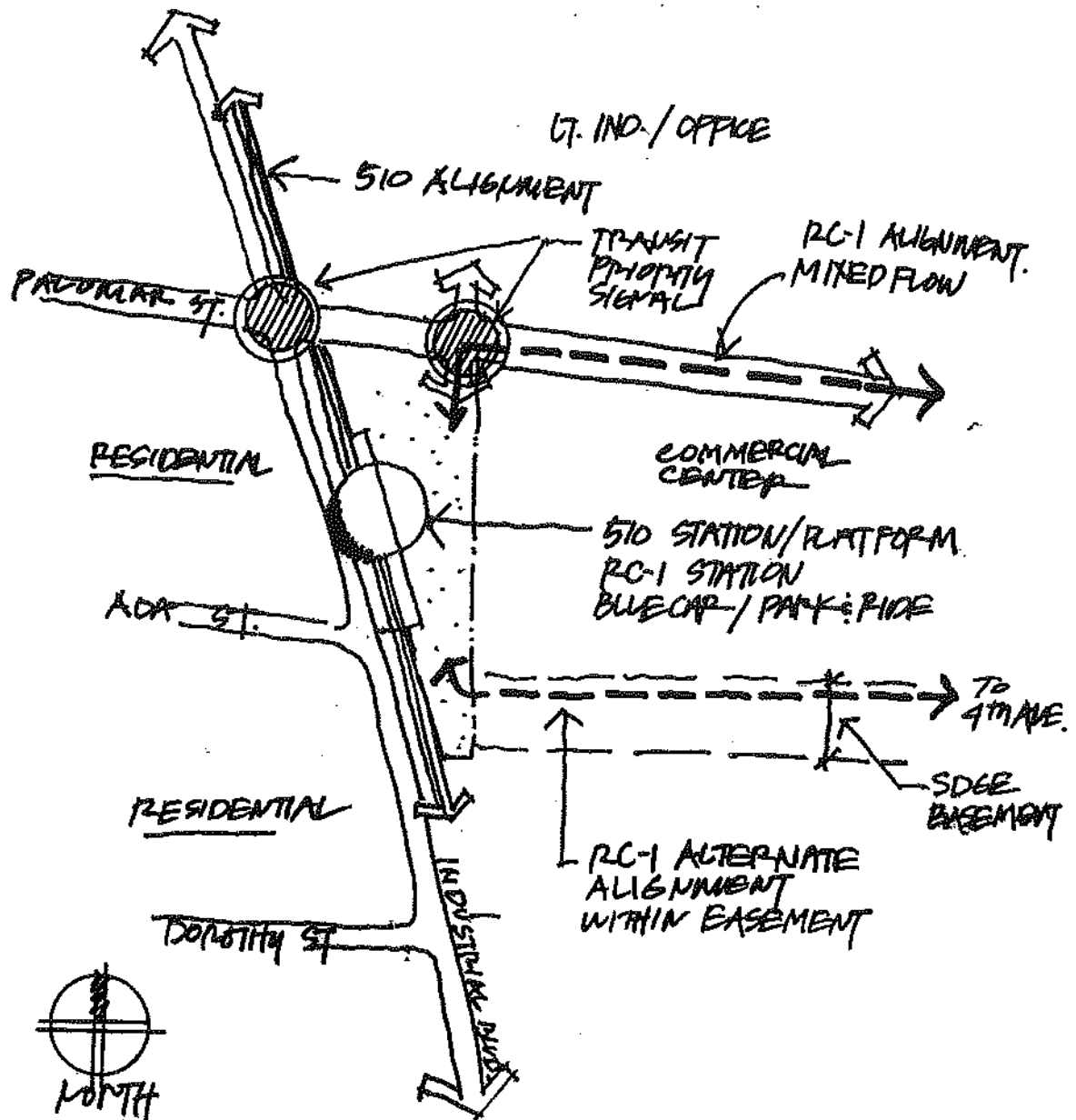


Figure 2.16:  
510- Palomar Street Station Location



EXISTING LAND USE



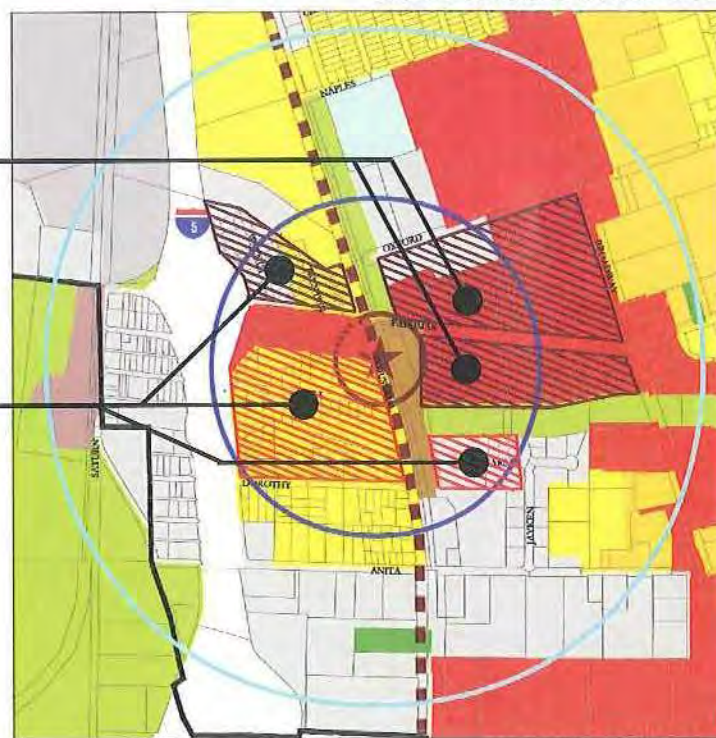
2020 PLANNED LAND USE

## Mixed Use Opportunities

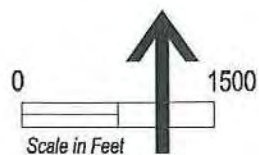
- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)



OPPORTUNITIES

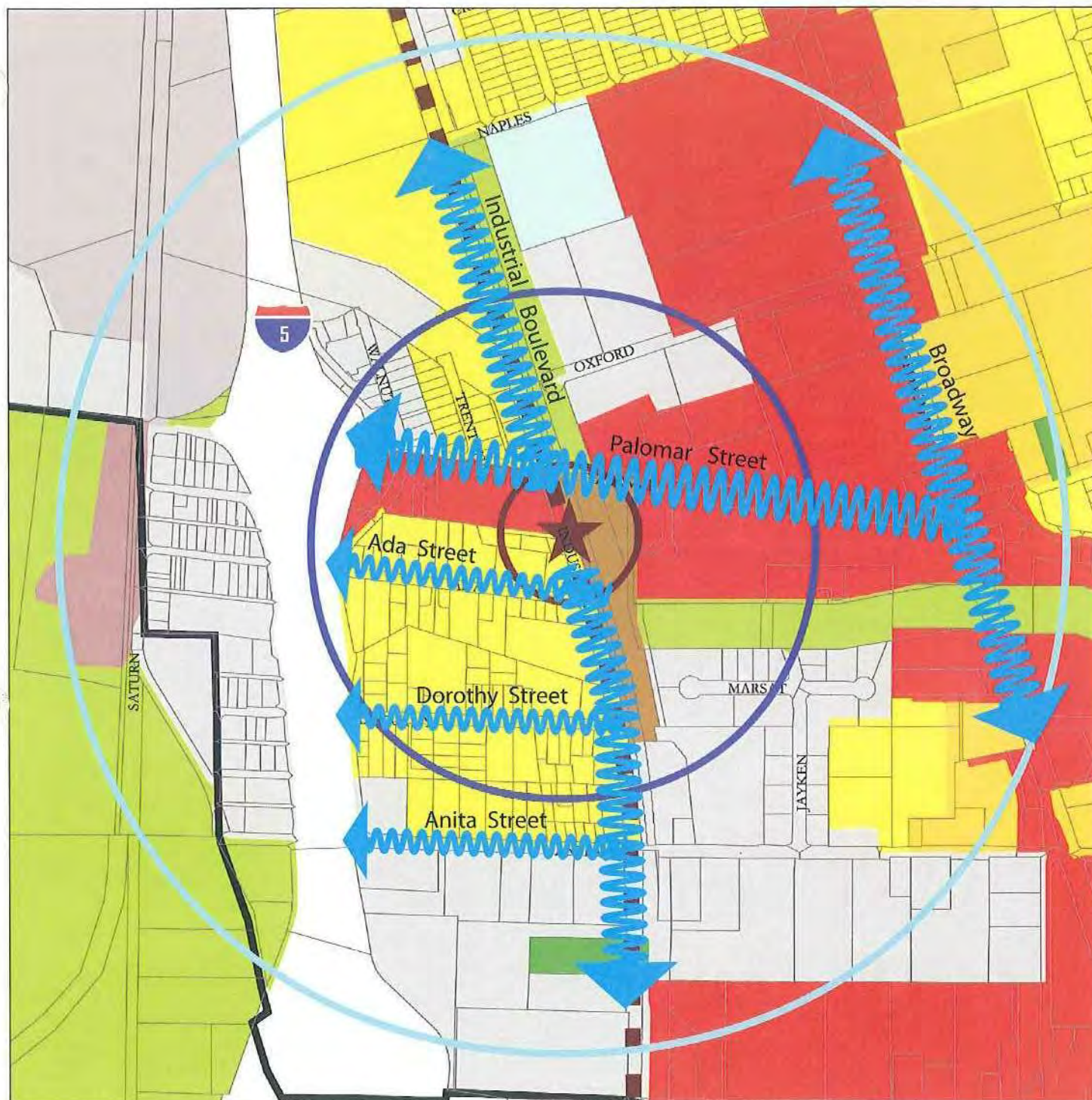


## LAND USE LEGEND

- |                              |                               |                               |
|------------------------------|-------------------------------|-------------------------------|
| ★ Car Station                | Extractive Industry           | Open Space Reserves/Preserves |
| — Car Service                | Rail Station/ Transit Centers | Parks                         |
| 1/4 Mile Buffer              | Freeways / Roads              |                               |
| 1/2 Mile Buffer              | Communications / Utilities    |                               |
| Single Family Residential    | Retail and Strip Commercial   |                               |
| Multi Family Residential     | Office Lo-Rise                |                               |
| Mobile Home Parks            | Religious Facilities          |                               |
| Hotel/Motel                  | Elementary Schools            |                               |
| Industrial Parks             | School District Offices       |                               |
| Warehousing / Public Storage | Vacant / Undeveloped          |                               |

**Figure 2.17**  
**510 Alignment**  
**Palomar Street Station**

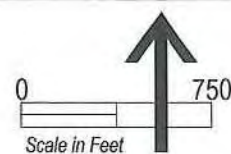




Station Location

■ ■ ■ ■ ■ 510 Alignment

~~~~~ Pedestrian Access to Station



**Figure 2.18**  
**510 Alignment**  
**Palomar Street Station**

## **F. Palm Avenue Trolley Station**

The Palm Avenue Station will continue to serve the 510 alignment primarily as a park and ride facility. The Palm Avenue Station currently provides 506 daily parking spaces immediately to the east of the station platform. The parking lot associated with the station typically operates at approximately 40 to 50 percent of capacity on a typical weekday.

This station also serves as a transfer hub for three Blue Car services: the 932, 933, and the 934. The Blue Car service station is located at the intersection of Hollister Street and Palm Avenue. The Blue Car service does not enter the station's parking area. It should also be noted that the station will also serve the planned 625 Red Car service.

### ▪ **Right-of-Way Requirements**

It is anticipated that no additional land or right-of-way requirements will be needed for this station. Service improvements will be limited to providing Blue and Red Car services within the existing parking area to create a station with easy transfer capabilities. These improvements can be easily handled within the existing station area footprint.

The number of passengers boarding at this station is forecasted to increase. Since the existing parking operates at less than half of capacity, parking should be adequate to serve the 510.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan (1999) identifies numerous land uses within ¼ mile to ½ mile of the station as shown in **Figure 2.19**. The land use plan illustrates a mix of residential (including mobile homes), commercial uses, religious facilities, and the Otay River Valley Open Space Preserve on the outer northern edge.

Generally speaking the existing uses consist of low density residential development to the west and east of the station, retail commercial and auto related uses to the west and low intensive recreational uses (golf driving range and go-cart track) to the north. The land west of Interstate 5 consists of primarily residential, commercial and light industrial/extraction uses (salt production).

#### **Proposed (2020)**

The 2020 proposed land use within ¼ mile radius of the station will intensify the uses surrounding the station. As illustrated in **Figure 2.19**, the land use plan provides significant areas devoted to mixed-use and an intensification of residential uses.

#### **Opportunities**

The 2020 land use plan provides for numerous opportunities for transit supportive development with large areas devoted to mixed-use and commercial uses near the transit station. In the future it may be appropriate to provide additional mixed-use opportunities to provide more transit supportive development and "walk-up" transit patrons. These areas are illustrated in **Figure 2.19**.



### ▪ **Access**

Because the 510 Palm Avenue Station is an existing park and ride facility the pedestrian access from the parking lots or the Blue Car service is fairly direct with few conflicts on site. However, to encourage pedestrian access from surrounding neighborhoods, especially the future mixed-use areas, significant improvements are needed to encourage potential riders to walk to the station.

The sidewalks on existing streets will be the primary means to access the station from the surrounding neighborhoods and will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Palm Street should be wide, pleasant and provide a sense of safety. This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 2.20**:

- Palm Avenue
- Hollister Street
- Harris Avenue
- 24<sup>th</sup> Street
- Conifer Avenue
- Citrus Avenue

### ▪ **Palm Avenue Station Issues**

For the Palm Avenue station the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- Traffic impacts at the Palm Avenue grade crossing resulting from increases in train frequency require further investigation. There are insufficient forecast data on peak hour vehicular traffic crossing the 510 track to determine the extent to which additional train crossings will increase delay and queue lengths to unacceptable levels. Substantial impacts from increases in delay or queue will require engineering and implementation of mitigation measures.

#### **Environmental Issues**

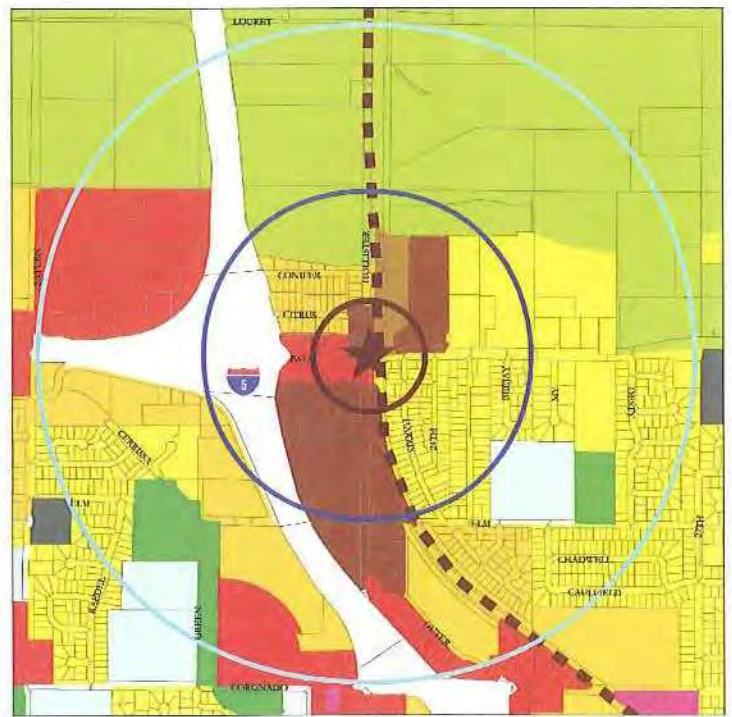
- The station has available parking capacity. Park-and-ride activity may increase at the station in response to increased train frequency and growth. The additional vehicular traffic may negatively impact area streets and roads. Increases in train frequency will increase noise and vibration and may negatively impact nearby sensitive land uses.

#### **Community Issues**

- Increases in vehicular traffic accessing the station and noise impacts are potential community impacts requiring further investigation.



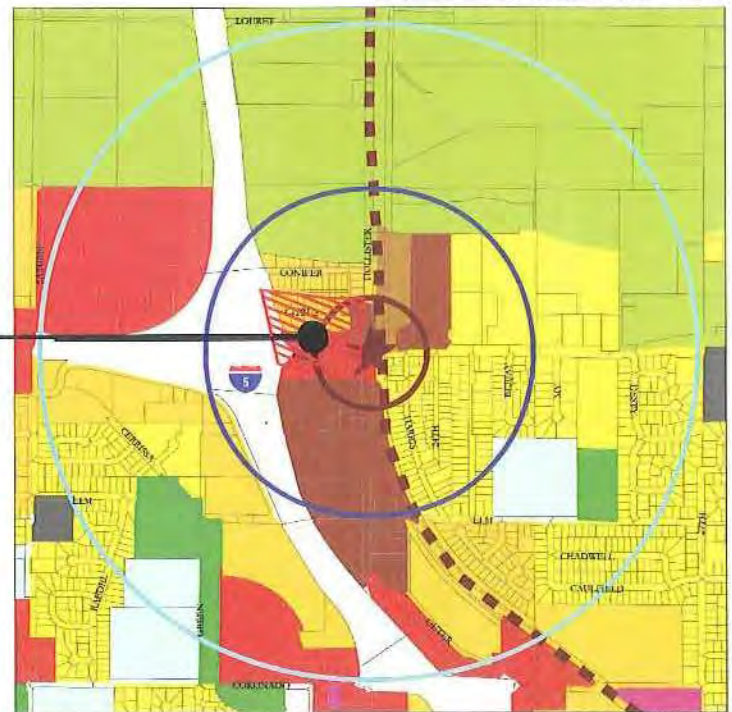
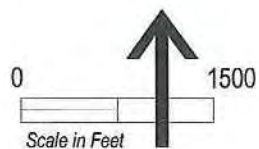
EXISTING LAND USE



2020 PLANNED LAND USE

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)



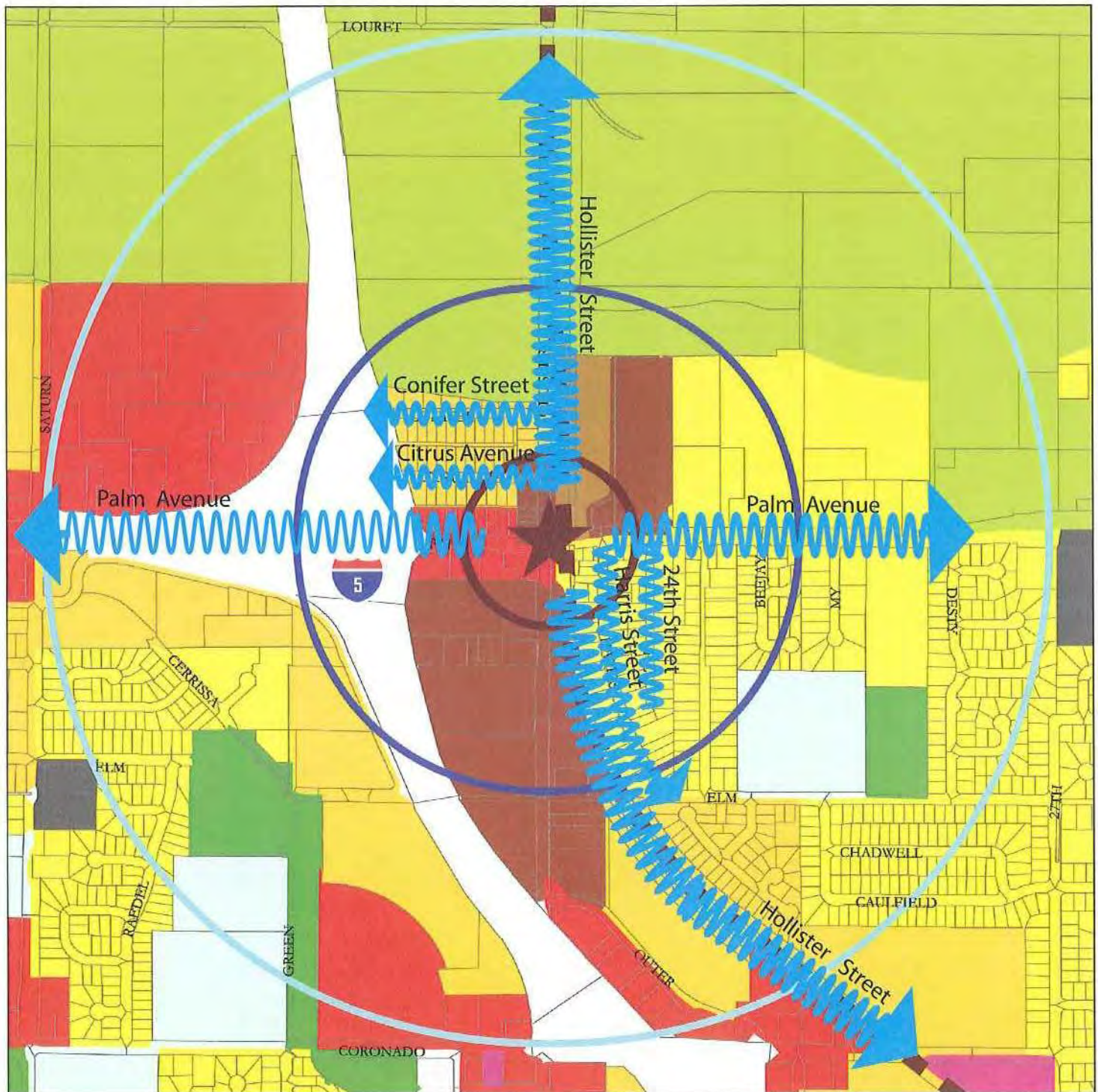
OPPORTUNITIES

## LAND USE LEGEND

|                           |                               |                                      |
|---------------------------|-------------------------------|--------------------------------------|
| ⊙ Car Station             | Warehouse / Public Storage    | Elementary Schools                   |
| — Car Service             | Extractive Industry           | Other Recreation                     |
| 1/4 Mile Buffer           | Rail Station/ Transit Centers | Parks                                |
| 1/2 Mile Buffer           | Freeways / Roads              | Open Space Reserves/Preserves        |
| Spaced Rural Residential  | Communications / Utilities    | Agriculture / Orchards and Vineyards |
| Single Family Residential | Other Transportation          | Vacant / Undeveloped                 |
| Multi Family Residential  | Retail and Strip Commercial   | Mixed Use                            |
| Mobile Home Parks         | Office Lo-Rise                |                                      |
| Hotel/Motel               | Religious Facilities          |                                      |
| Industrial Parks          | Fire/Police Stations          |                                      |

**Figure 2.19**  
**510 Alignment**  
**Palm Avenue Trolley Station**





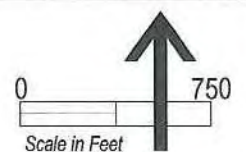
Station Location



510 Alignment



Pedestrian Access to Station



**Figure 2.20**  
**510 Alignment**  
**Palm Avenue Trolley Station**

## **G. Iris Avenue Station**

The Iris Avenue station is a park and ride facility and a significant transfer hub for Blue Car services including the 29, 901, 905, 932, 933, and 934 routes. The Blue Car service station platforms are located off-street adjacent to the 510 station platform. Approximately 134 daily parking spaces are available at the station site. The parking lot operates at about fifty percent of its capacity on a typical weekday during peak commuter period. Additionally, the station will serve the future 625 Red Car service. The 540 Station is also planned for this area and is discussed in *Chapter 3*.

### ▪ **Right-of-Way Requirements**

No additional right-of-way will be required for the continued operation of the 510 station. However, implementation of the 540 alignment will require station relocation. Several location options for a new transfer area are available south of the existing station, which are discussed in the 540 Route Iris Street Station section in *Chapter 3*.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan as illustrated in **Figure 2.21** consists of predominately residential uses surrounding the station with industrial uses located to the north and southeast. A school site is located to the west of the station. Currently, the land south of SR 905 consists of predominately single-family residential uses of moderate density. The land in the immediate vicinity of the existing trolley tracks south of SR 905 consists of a park and school site, a freight container storage facility, and vacant land surrounded by the SR 905 on-ramp.

#### **Proposed (2020)**

The 2020 proposed land use within ¼ mile radius of the station will continue to be predominately residential with intensification of residential uses to the northwest of the station. Also a small mixed-used development is illustrated south and east of where the 510 station is identified and illustrated in **Figure 2.21**.

#### **Opportunities**

The overall design and function of this station must work in concert with the adjacent Blue Car transfer facilities. The 510 station will still operate as a significant "park and ride" facility. However, intensification of surrounding land uses, particularly residential uses, could strengthen the "walk up" capability of the station.

Providing additional mixed-use opportunities than currently shown will provide more transit supportive uses. Existing underutilized sites could provide the opportunity for future infill to increase the density and mix of uses within the surrounding area. Mixed-use developments could also occur on the south and southeast side of the 510 station.

For these mixed-use opportunities, it is recommended that residential use be the dominant land use with office and commercial use being considered supportive and or secondary uses as illustrated in **Figure 2.21**.



### ▪ **Access**

Pedestrian access will be dependent on accessibility from the surrounding areas to be able to reach the station. The surrounding areas include residential and employment areas north and south of SR 905, as illustrated in **Figure 2.22**. Direct pedestrian access from the residential neighborhoods and the employment areas should be improved.

The sidewalks on existing streets provide the primary means to access these stations and it may be beneficial to improve these connections with a comprehensive streetscape enhancement program. This program will be part of the overall station development plans and should include the following streets:

- Beyer Boulevard
- Iris Street
- Dairy Mart Road
- 30th Street

### ▪ **Iris Avenue Station Issues**

For the Iris Avenue station the following are possible issues affecting the implementation of station improvements.

#### ***Engineering Issues***

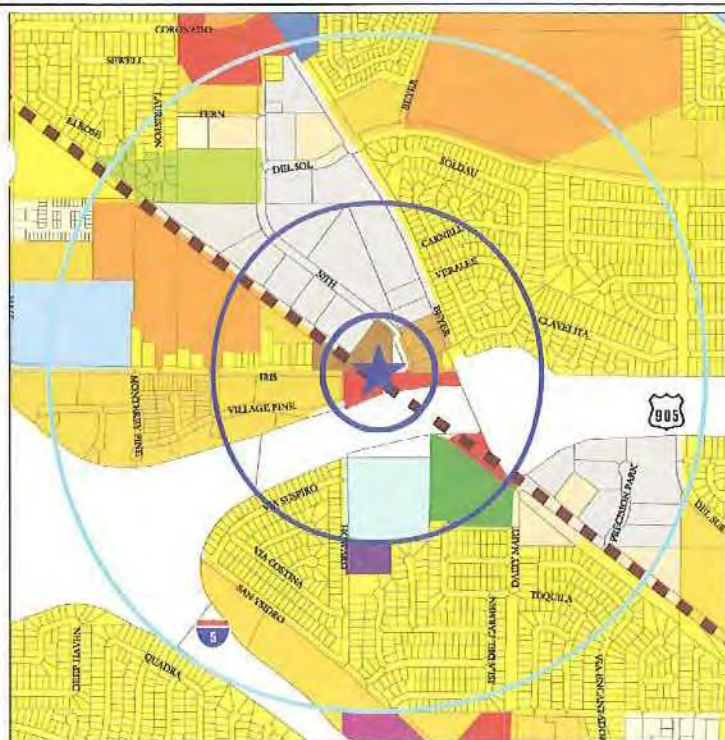
- Traffic impacts at the Iris Avenue grade crossing resulting from increases in train frequency require further investigation. There are insufficient forecast data on peak hour vehicular traffic crossing the 510 track to determine the extent to which additional train crossings will increase delay and queue lengths to unacceptable levels. Substantial impacts from increases in delay or queue will require engineering and implementation of mitigation measures.

#### ***Environmental Issues***

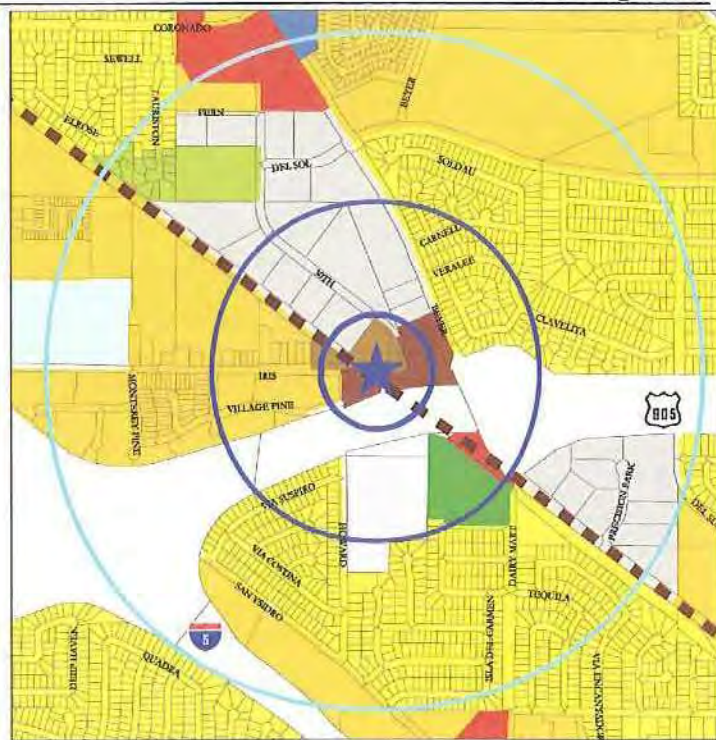
- The station has available parking capacity. Park-and-ride activity may increase at the station in response to increased train frequency and growth. The additional vehicular traffic may negatively impact area streets and roads. Increases in train frequency will increase noise and vibration and may negatively impact nearby sensitive land uses.

#### ***Community Issues***

- Increases in vehicular traffic accessing the station and noise impacts are potential community impacts requiring further investigation.



EXISTING LAND USE



2020 PLANNED LAND USE

## Mixed Use Opportunities

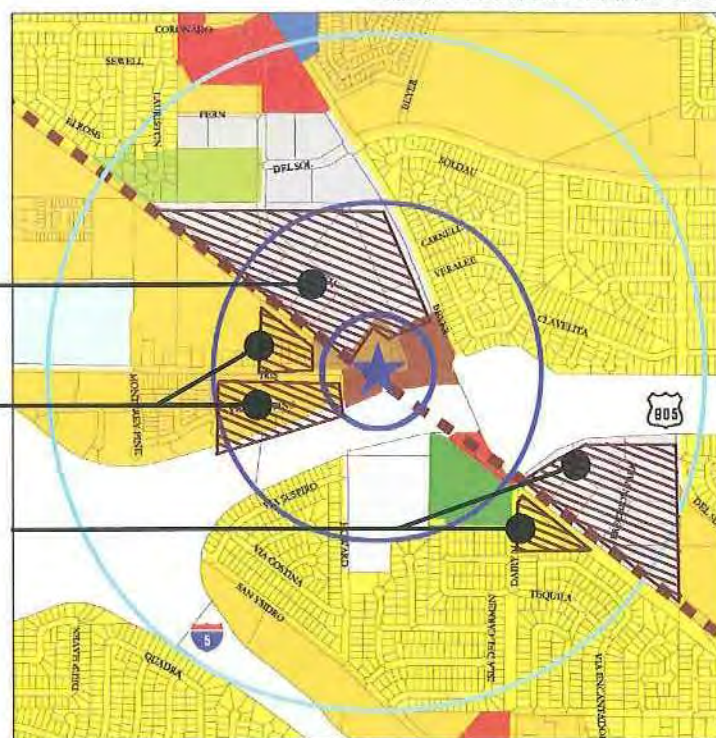
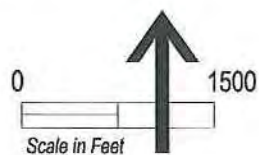
- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)



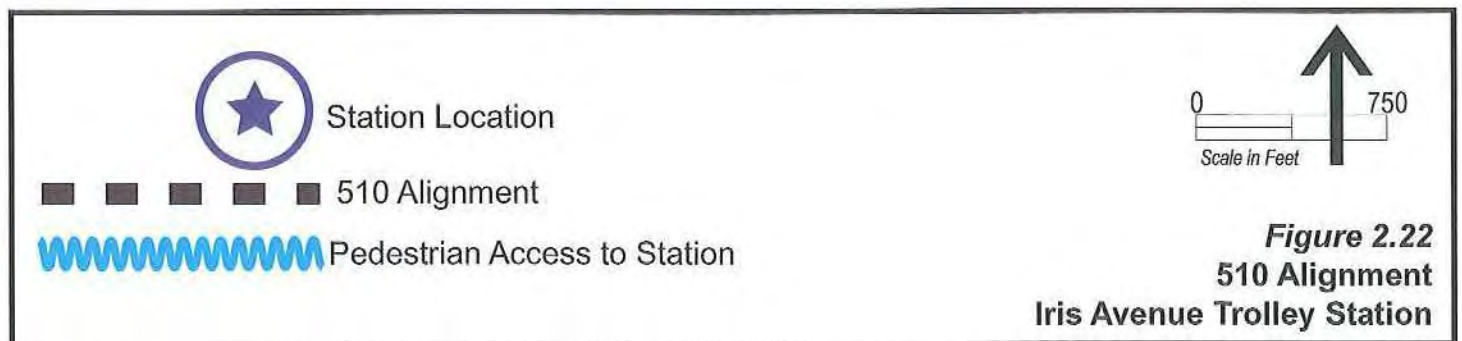
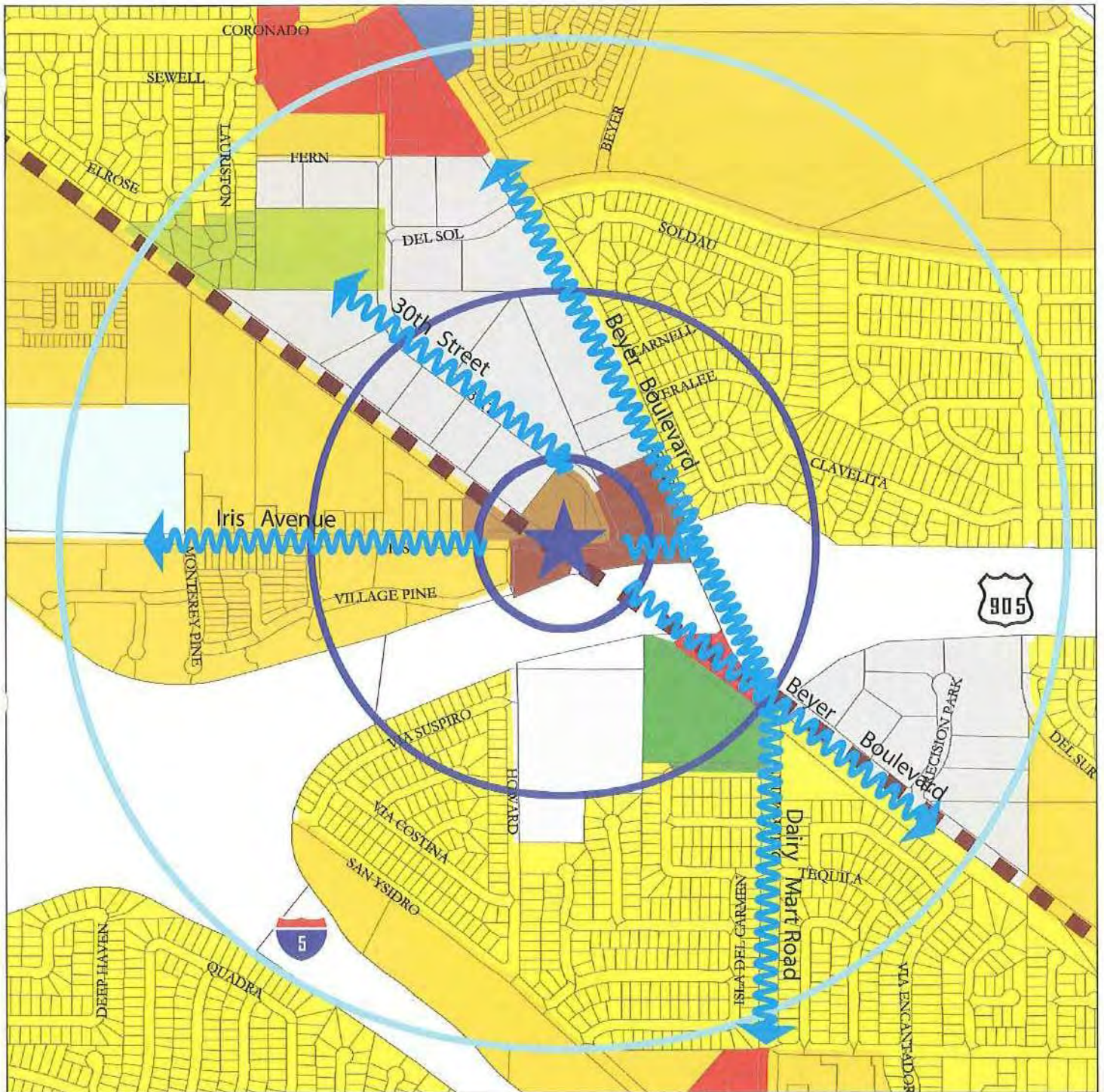
OPPORTUNITIES

## LAND USE LEGEND

- |                                       |                                     |                                           |
|---------------------------------------|-------------------------------------|-------------------------------------------|
| ⊙ Car Station                         | Yellow Junkyard/Dump/Landfill       | Green Parks                               |
| — Car Service                         | Brown Rail Station/ Transit Centers | Light Green Open Space Reserves/Preserves |
| Blue 1/4 Mile Buffer                  | White Freeways / Roads              | Yellow Vacant / Undeveloped               |
| Light Blue 1/2 Mile Buffer            | Red Other Transportation            | Brown Mixed Use                           |
| Light Yellow Spaced Rural Residential | Red Retail and Strip Commercial     |                                           |
| Yellow Single Family Residential      | Purple Religious Facilities         |                                           |
| Orange Multi Family Residential       | Blue Libraries                      |                                           |
| Orange Mobile Home Parks              | Light Blue Junior High Schools      |                                           |
| Grey Industrial Parks                 | Light Green Elementary Schools      |                                           |
| White Warehousing / Public Storage    | White Schools                       |                                           |

**Figure 2.21**  
**510 Alignment**  
**Iris Avenue Trolley Station**





## **H. Beyer Boulevard / Cottonwood Street Trolley Station**

The Beyer Boulevard Station will continue to serve the 510 alignment primarily as a park and ride facility with a modest amount of walk-up passengers. Currently the Beyer Boulevard Station provides 154 daily parking spaces immediately east of the station platform. The parking lot associated with the station typically operates at approximately forty percent of its capacity during peak commuter times. This station also serves as a transfer hub for the 932 Blue Car service. The Blue Car service does not enter the station's parking area.

### ▪ **Right-of-Way Requirements**

It is anticipated that no additional land or right-of-way will be needed for this station. Station improvements will include some redesign of the transit facility, but will be limited to improvements necessitated by the Blue Car service that can be easily handled within the existing area footprint.

The existing surface parking at the station operates at less than its capacity. Parking should be adequate to serve the 510 in both the near and long term.

### ▪ **Land Use Integration**

The existing land use plan illustrates a predominance of residential uses with health care and religious uses also surrounding the station. Commercial uses are located to the south of the station near or parallel to Interstate 5 as illustrated in **Figure 2.23**.

### **Proposed (2020)**

The 2020 proposed land use within ¼ mile radius of the station will continue to be predominately residential. However, the plan does propose the intensification of residential uses in all areas in close proximity to the station. Also a small area is identified as a commercial use north of Beyer Boulevard as illustrated in **Figure 2.23**.

### **Opportunities**

It is recommended that mixed-use opportunities occur near the Beyer Street Station as illustrated in **Figure 2.23**. Providing more mixed-use opportunities than currently shown will provide for more transit supportive uses. Existing underutilized sites could provide the opportunity for future infill to increase the density, intensity, and mix of uses within the surrounding area.

It is recommended that the mixed-use area north of Beyer Boulevard and east of the station should predominately consist of commercial uses with secondary uses of office and residential supporting the development. Northwest of the station on Beyer Boulevard the dominant land use will be residential with commercial and office being secondary. The mixed-use area south of the trolley track will also contain residential, commercial, and office uses with residential being the primary land use.

### ▪ **Access**

Because the 510 Beyer Boulevard station is an existing park and ride facility the pedestrian access from the parking lots to the Blue Car service is fairly direct with few conflicts on site. However, to encourage pedestrian access from surrounding



neighborhood, especially the proposed mixed-use areas, significant improvements are needed to encourage potential riders to walk to the station.

The sidewalks on existing streets will be the primary means to access the station from the surrounding neighborhoods and will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Beyer Boulevard should be wide, pleasant and provide a sense of safety.

This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 2.24**:

- Beyer Boulevard
- South Vista
- Cottonwood Road
- Sunset
- Smythe Avenue
- West Park Avenue

▪ **Beyer Boulevard and Cottonwood Street Station Issues**

For the Beyer Boulevard and Cottonwood Street Station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- No substantial engineering issues are anticipated at this station.

***Environmental Issue***

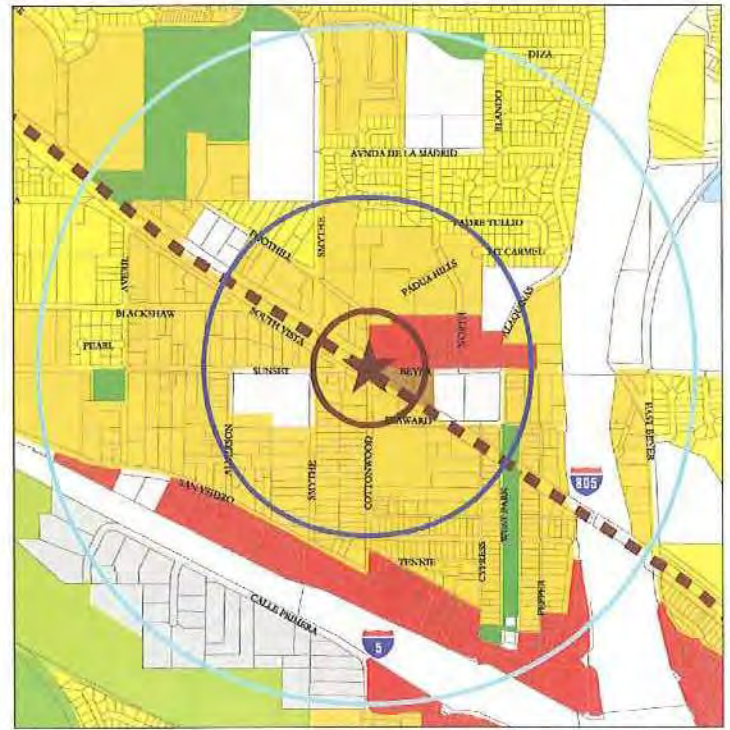
- The station has available parking capacity. Park-and-ride activity may increase at the station in response to increased train frequency and growth, but the increase will be minor and is not expected to have substantial impacts on vehicular traffic service on area streets and roads. Increases in train frequency will increase noise and vibration and may negatively impact nearby sensitive land uses.

***Community Issues***

- Increased noise due to increased train frequency is a potential community impact requiring further investigation.



EXISTING LAND USE



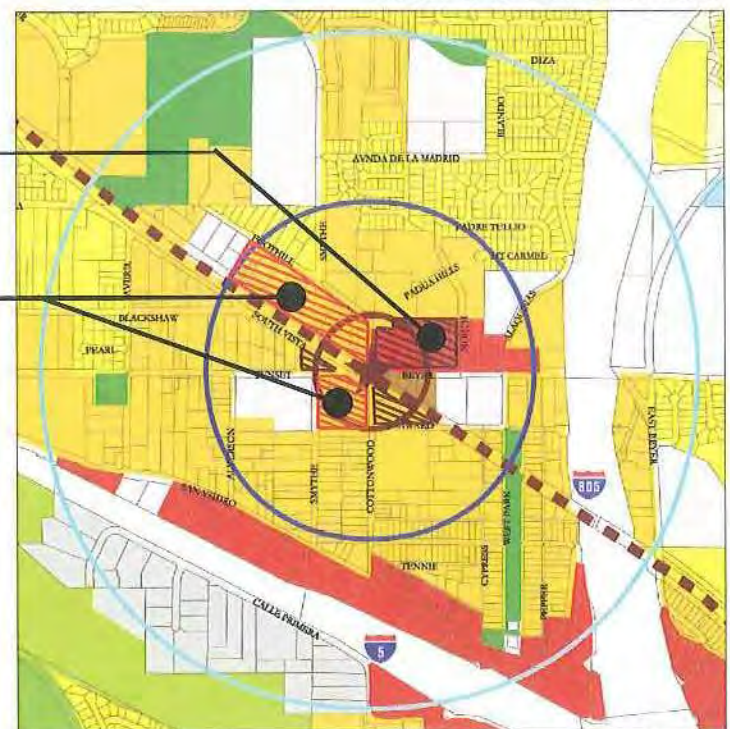
2020 PLANNED LAND USE

## Mixed Use Opportunities

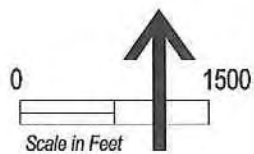
- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Commercial/Office (Secondary)



OPPORTUNITIES



## LAND USE LEGEND

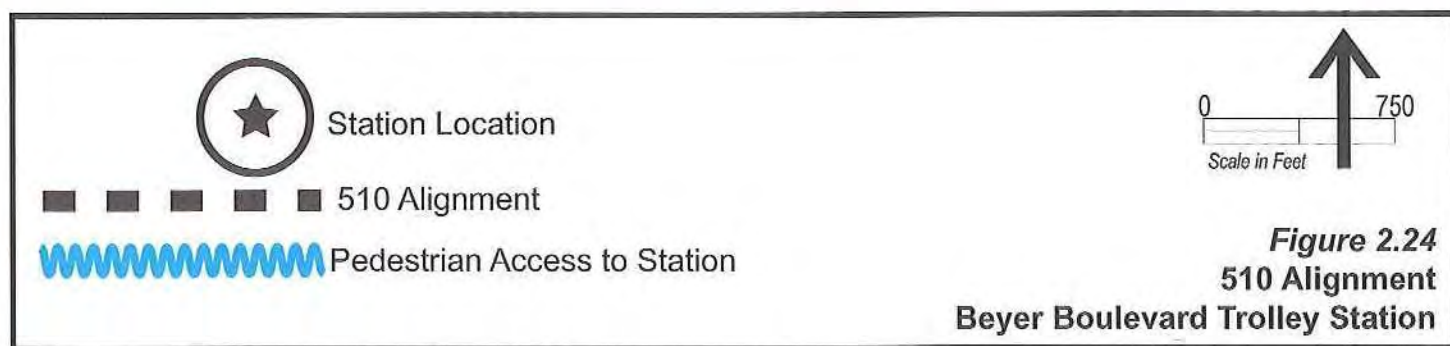
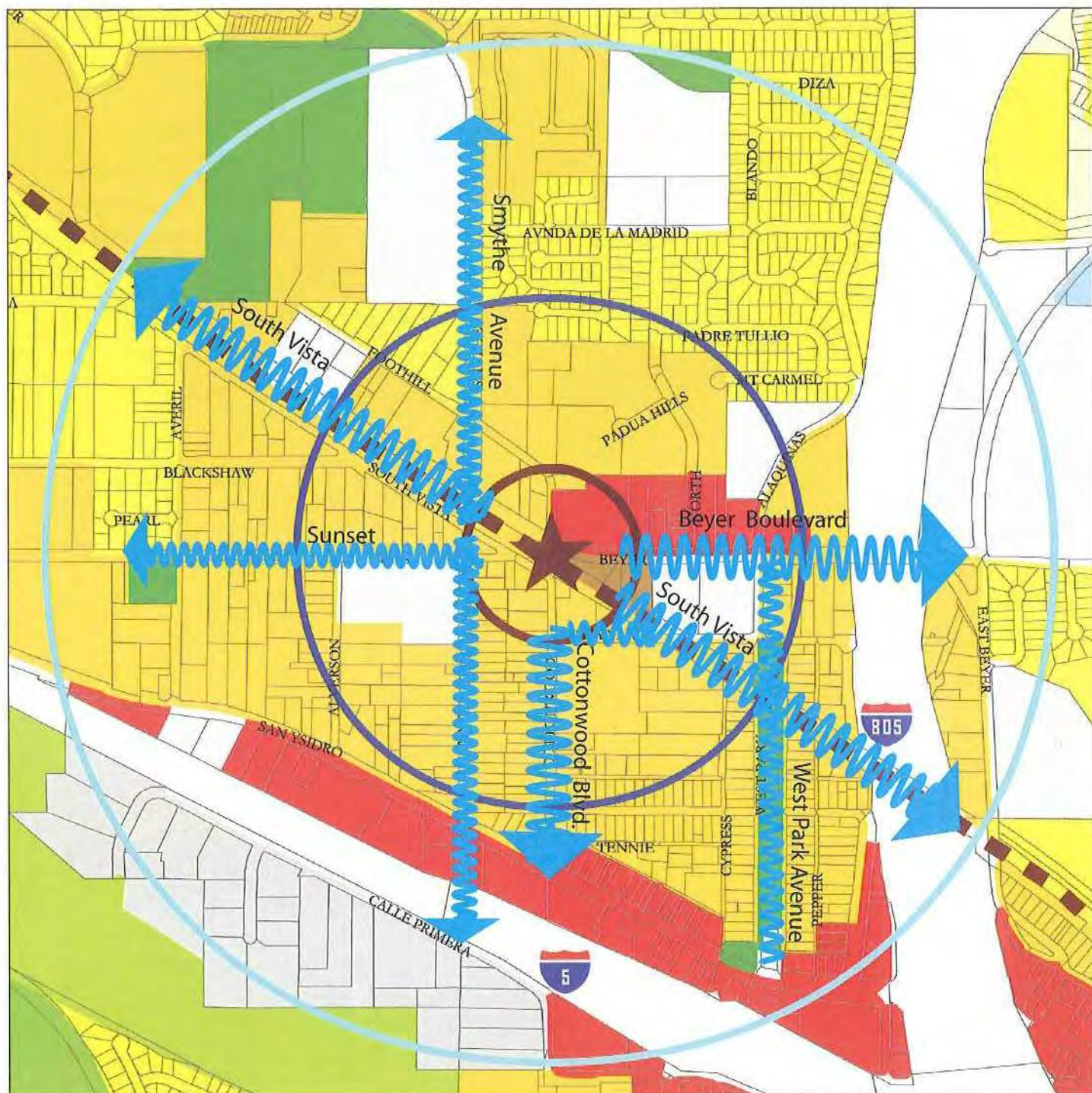
- ⊙ Car Station
- Car Service
- 1/4 Mile Buffer
- 1/2 Mile Buffer
- Spaced Rural Residential
- Single Family Residential
- Multi Family Residential
- Mobile Home Parks
- Other Group Quarters
- Hotel/Motel

- Heavy Industry
- Warehousing / Public Storage
- Rail Station/ Transit Centers
- Freeways / Roads
- Other Transportation
- Retail and Strip Commercial
- Office Lo-Rise
- Religious Facilities
- Libraries
- Post Offices
- Fire/Police Stations
- Other Health Care

- Junior Colleges
- Junior High Schools
- Elementary Schools
- Other School
- Parks
- Agriculture / Orchards and Vineyards
- Vacant / Undeveloped
- Open Space Reserves/Preserves

**Figure 2.23**  
**510 Alignment**  
**Beyer Boulevard Trolley Station**







## **I. San Ysidro Intermodal Transportation Center Station**

The San Ysidro ITC will continue to serve the 510 alignment as shown in **Figure 2.25**. The station area is currently under reconstruction to expand the station platform area, increase curve radii approaching the station from the north, and construct other improvements. This station serves as a transfer hub for the Blue Car 905 and 932 services. Platforms and bays for Blue Car services are located on street immediately to the west of the existing 510 platforms. These platforms will be relocated off-street as part of the area's reconstruction. The station is also the terminus for the proposed 540 and 680 routes.

### ▪ **Right-of-Way Requirements**

Additional right-of-way may be required for the continued operation of the 510 station as ridership increases. The 510 station area is currently being redeveloped. The two 510 platforms will be relocated slightly. Whether the passenger waiting areas have sufficient capacity to handle future ridership will require further investigation.

### ▪ **Land Use Integration** **Existing (1999)**

Commercial, railroad, highway, transit, and government facilities are crowded around the existing 510 trolley station. The area is heavily devoted to the movement of people and goods across the border. The existing land use plan illustrates in **Figure 2.25** the area's uses as being public services, commercial, and industrial.

### **Proposed (2020)**

As illustrated in **Figure 2.26**, the 2020 proposed land use, within ¼ mile radius of the station will increase the commercial uses, open space and transportation uses. The transportation uses follow the existing rail freight line. A small residential component is proposed approximately ½ mile northeast of the station.

### **Opportunities**

No significant land use changes are needed to provide additional ridership support for the San Ysidro ITC. The station is heavily used and is expected to gain ridership in the future. However, the entire station area needs redesign to serve the proposed multiple alignments in order to bring "order" to a chaotic and disorganized area.

### ▪ **Access**

Access to the transit services at the San Ysidro ITC will be primarily by foot traffic. The station will be heavily patronized by pedestrian and bicycle traffic crossing the border. Clear and direct pedestrian accessibility to the station for all of the transit uses should be a priority as illustrated in **Figure 2.27**. Eliminating all unnecessary vehicle access south of San Ysidro Boulevard and east of Beyer Boulevard should be explored to improve the pedestrian environment. This includes the relocation of several non-governmental uses such as the Greyhound station, taxi service, and even commercial uses.

### ▪ **San Ysidro Intermodal Transportation Center Station Issues**

For the San Ysidro ITC Station the following are possible issues affecting the implementation of station improvements.

#### ***Engineering Issues***

- The 510 station at the San Ysidro station is currently being redeveloped. It is, and will continue to be, a terminal station for the route. Southbound trains enter the station and stop. As passengers board and alight, the driver makes his way from the southern end of the train to the northern end of the train to start the northbound trip.
- Currently 8 trains per hour operate during the peak hours. If this is increased to 12 trains per hour it is unclear if there will be adequate time for a leading train to clear the station before the arrival of the following train. Further analysis will be necessary to determine the required time to enter the station, dwell, and clear the station blocks upon departure. The station is capable of holding two trains at one time, but whether their use will be required routinely during peak hours of operation will require further investigation.
- If reduced headways require routine utilization of two platforms during peak hours, the available platform space may be inadequate. Increased passenger loads are expected in the future. Further examination of platform availability and operation will be required.

#### ***Environmental Issues***

- Noise and vibration will increase with reductions in headways. The current station improvement project will reduce curves approaching the station and reduce wheel noise. The operation of trains at low speed in this area is unlikely to generate excessive amounts of vibration, but a more thorough examination of both noise and vibration will be necessary to determine impacts.
- Increases in train frequency will have impacts on traffic service in the immediate area of the station, as well as on pedestrian traffic. Whether these will constitute impacts requiring mitigation will require further analysis.

#### ***Community Issues***

- Increased pedestrian traffic across the border and increases in 510 service will result in additional congestion in the area of the 510 station.
- Pedestrian traffic, vehicular traffic, and transit traffic can all be expected to contribute to and experience higher levels of congestion.
- A more thorough examination of congestion impacts of station and 510 service improvements will be needed to identify and mitigate potential congestion impacts.

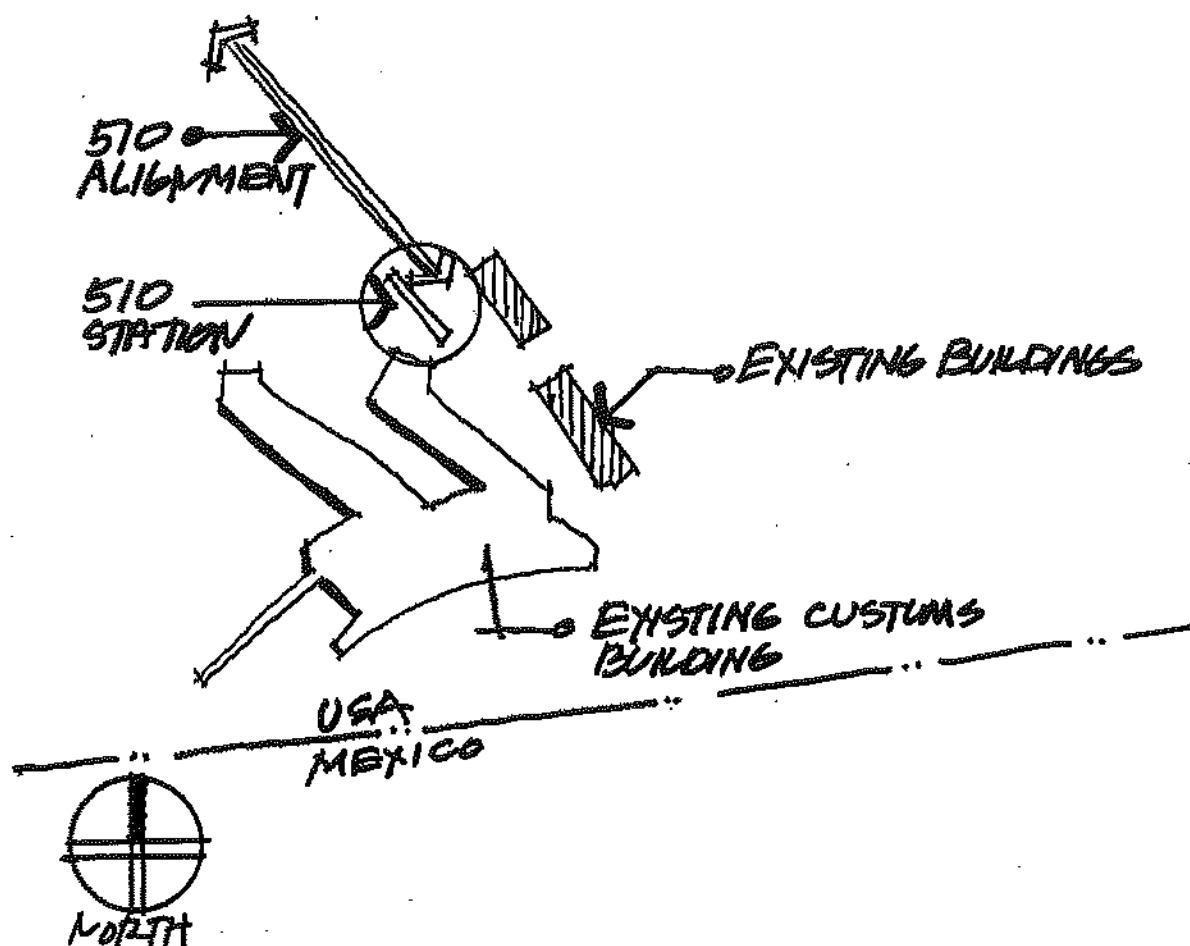
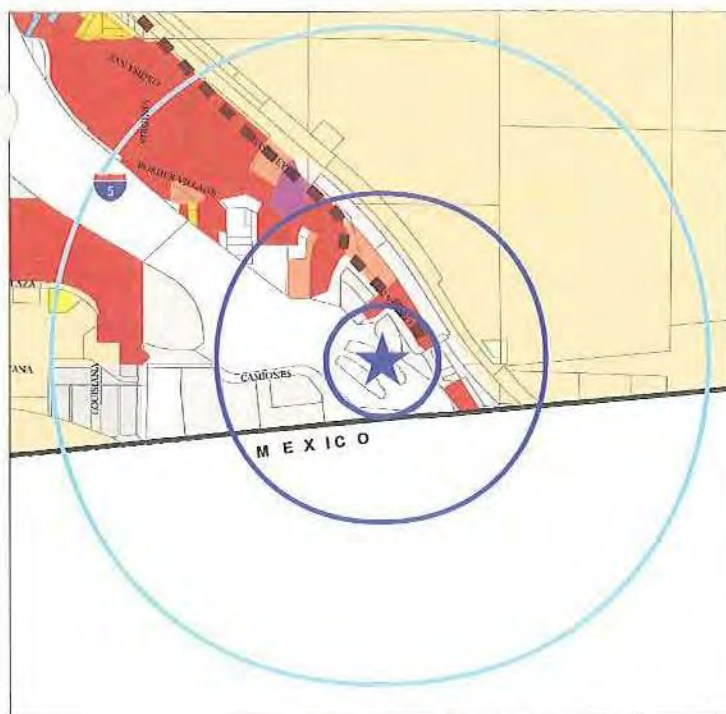
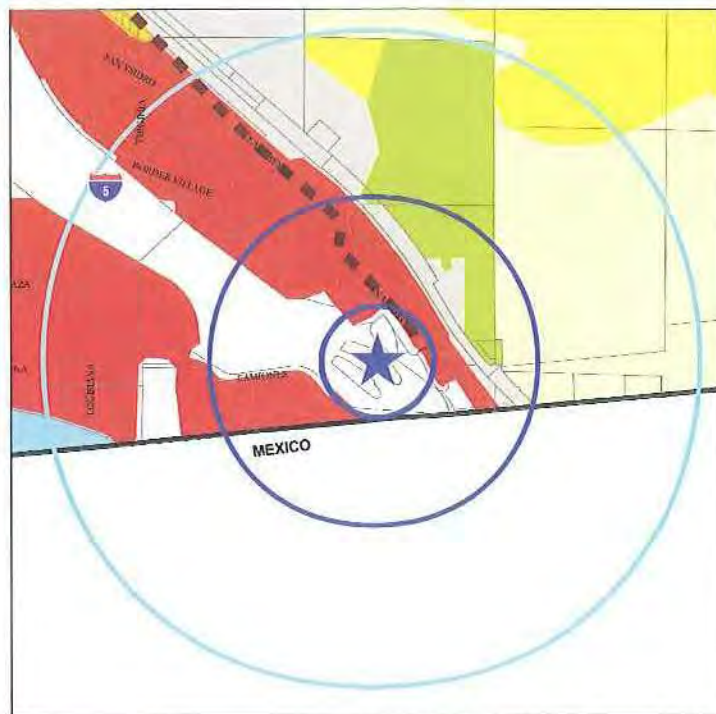


Figure 2.25:  
510- San Ysidro ITC Station Location



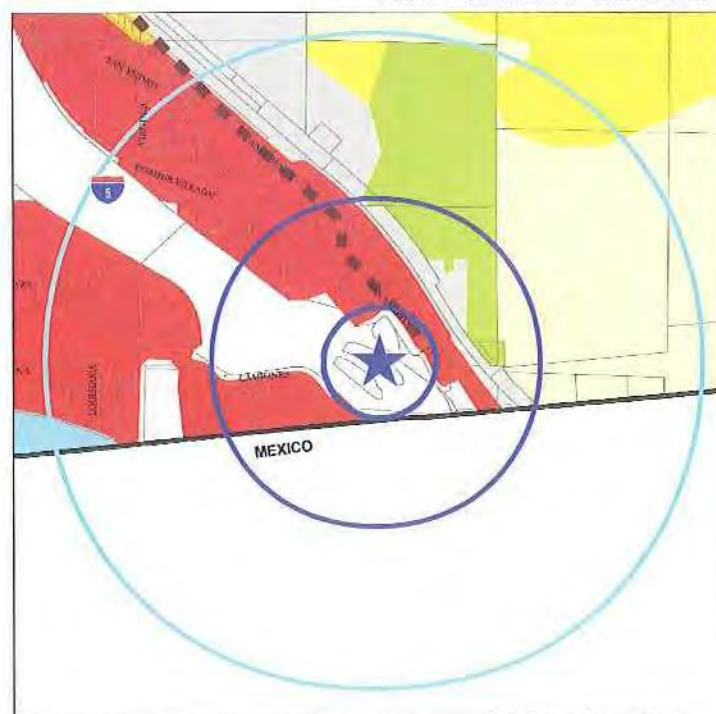


EXISTING LAND USE

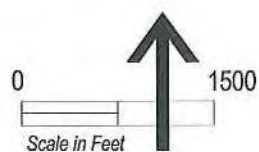


2020 PLANNED LAND USE

NOTE:  
No Opportunities Proposed At This Time



OPPORTUNITIES



### LAND USE LEGEND

- |                              |                                 |
|------------------------------|---------------------------------|
| Car Station                  | Freeways / Roads                |
| Car Service                  | Other Transportation            |
| 1/4 Mile Buffer              | Retail and Strip Commercial     |
| 1/2 Mile Buffer              | Office Lo-Rise                  |
| Spaced Rural Residential     | Gov't Office / Civic Centers    |
| Single Family Residential    | Other Public Services           |
| Multi Family Residential     | Elementary Schools              |
| Hotel/Motel                  | Vacant / Undeveloped            |
| Industrial Parks             | Open Space Reserves / Preserves |
| Warehousing / Public Storage |                                 |

**Figure 2.26**  
**510 Alignment**  
**San Ysidro ITC Station**



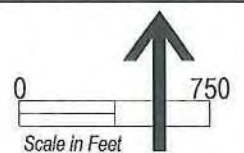
Station Location



510 Alignment



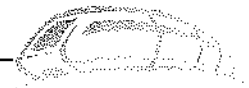
Pedestrian Access to Station



**Figure 2.27**  
**510 Alignment**  
**San Ysidro ITC Station**



## Chapter 3 - 540 Alignment



### 3.1 SUMMARY OVERVIEW AND CONCLUSIONS

The following is an overview of the general route alignment, station types, and priority treatments for the 540 alignment. The service route and alignment will parallel the 510 route and will provide express service in the same corridor. The following sections provide additional project analysis and more details information regarding the alignment designs.

#### A. 540 Alignment - San Ysidro Intermodal Transportation Center to Old Town San Diego

The 540 route will serve the I-5 corridor from the San Ysidro Intermodal Transportation Center (ITC) to Old Town San Diego. From the south, the route will travel through the Cities of San Diego, Chula Vista and National City then through downtown San Diego before reaching its terminus at Old Town. The alignment is proposed to enter the study area from the north along Harbor Drive near 8<sup>th</sup> Street in National City. It will follow Harbor Drive south to I-5 and then follow the alignment of I-5 to the south. Once on I-5 the alignment will utilize the planned HOV managed lanes as far south as SR-905 and follow SR-905 east to the existing trolley right-of-way near Beyer Boulevard. From this point to San Ysidro three alternatives were reviewed and deemed possible. The alternative that was selected was:

- **Alternative C** which will continue east along SR-905 to I-805 then south to the 510 overpass. The alignment will transition from I-805 at the 510 overpass onto a new facility that will be constructed to run parallel to the existing 510 tracks to the San Ysidro ITC station.

Alternative C was chosen in this study as the best alternative for the 540 alignment from Iris Avenue to San Ysidro and is shown in **Figure 3.1**. The 540 will be an express service operating in generally the same corridor as the 510 and will be approximately 11-miles in length within the project study area.

Alternative C provides the same alignment characteristics as the other two alignments until reaching the Iris Avenue station. At this point the alignment would continue east to I-805 on SR-905. The alignment would use I-805 and then an exclusive right-of-way parallel to the existing trolley line (510). This routing offers the best operational opportunity by maintaining a higher vehicle speed. The route also has the least possible conflicts with mixed flow traffic and intersections.

The I-5 HOV/Managed Lanes referenced in the study area are illustrated in the final draft of *Mobility 2030 – The Transportation Plan for the San Diego Region*. The lanes are shown in planning documents to be completed between 2014 (SR-54 north to project boundary) and 2020 (SR-54 south to SR-905).

It will be necessary for the 540 alignment to be implemented in order to relieve the ridership pressure/congestion in this corridor currently served by the existing 510 alignment or the Blue Line Trolley service. Without the 540 alignment the 510 will reach its capacity by 2020 and only if significant improvements to the 510 alignment are implemented. See *Chapter 2 – 510* for additional discussion regarding this issue.



### ▪ **Outside the Project Study Area**

North of the study area the alignment is assumed to follow Harbor Drive to Pacific Highway to its final destination in Old Town. This portion of the route will require a number of different priority treatments to maintain the level service expected of a Yellow Car alignment.

Directly north of the study area the 540 could be within its own dedicated transit lanes. These dedicated transit lanes could be either within median lanes on Harbor Drive or dedicated lanes on the east side of the right-of-way. Either one of these methods will be feasible until the alignment reaches a point north of the Barrio Logan Station near the 10<sup>th</sup> Avenue Marine Terminal.

The proposed 540 alignment corridor is extremely constrained between the bridge on Harbor Drive, the San Diego Convention Center, and Pacific Highway. Maintaining service reliability in this area will be critical to the overall success of the alignment.

Once on Pacific Highway, the 540 could use multiple priority measures to reach the Old Town Transit Center to ensure service reliability. These measures could include traveling in mixed-flow lanes or dedicated lanes. In all cases the use of transit priority signals will be incorporated into the design for this portion of the alignment. In general, further investigation of the alignment north of the study area will be needed to determine the alignment location, stations and transit priority treatments.

Other alternatives that were also investigated for the feasibility of the 540 alignment within the corridor include:

- Widening the existing San Diego Trolley or 510 right-of-way
- Using the existing freight track roadbed along the SD&AE railroad west of I-5

However, further investigation of the above mentioned alternatives is not warranted, since HOV/Managed Lanes are now planned for I-5 within the project study area.

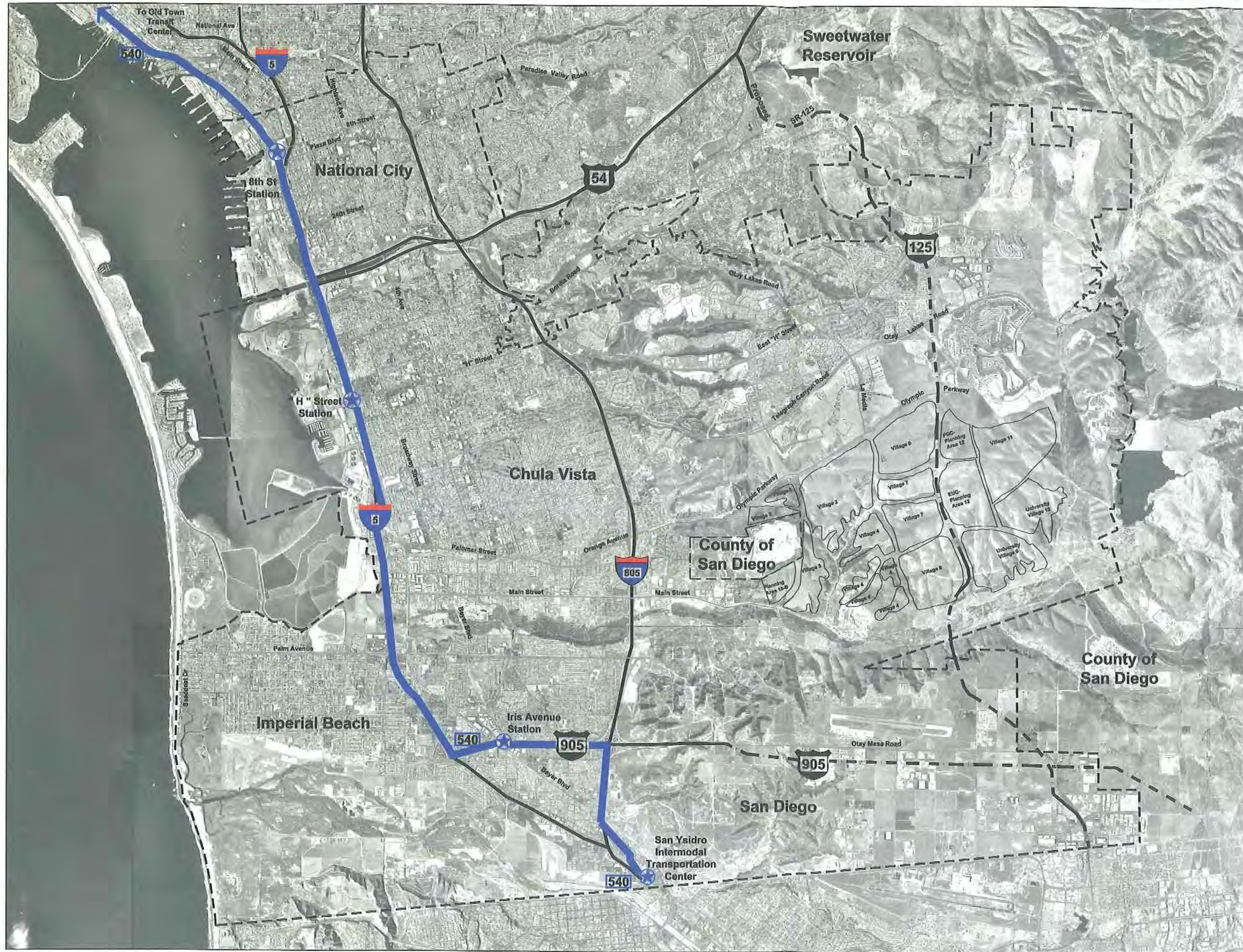
### **B. Alignment Station Types**

Based on the field research and project analysis there are 4 stations in the study area identified for the 540 route. They are illustrated in **Figure 3.1**. The type of transit station associated with each location is summarized in **Table 3.1**. Further discussion for each station is provided in *Section 3.3: Station Location and Types*.

### **C. Priority Treatment Conclusions**

The priority treatments recommended for the 540 are summarized and illustrated in **Figure 3.2**. These recommendations are based primarily on the corridor's traffic congestion and physical constraints and their feasibility for implementation.









## Alignment and Stations

MTDB - South Bay Transit  
First Project

**ROUTE 540 - Old Town to the San  
Ysidro Intermodal Transportation  
Center**

### LEGEND

-  Alignment
-  Project Boundary
-  Proposed Freeways
-  Yellow and Red Car Stations

0 1/2 1 mile



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9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

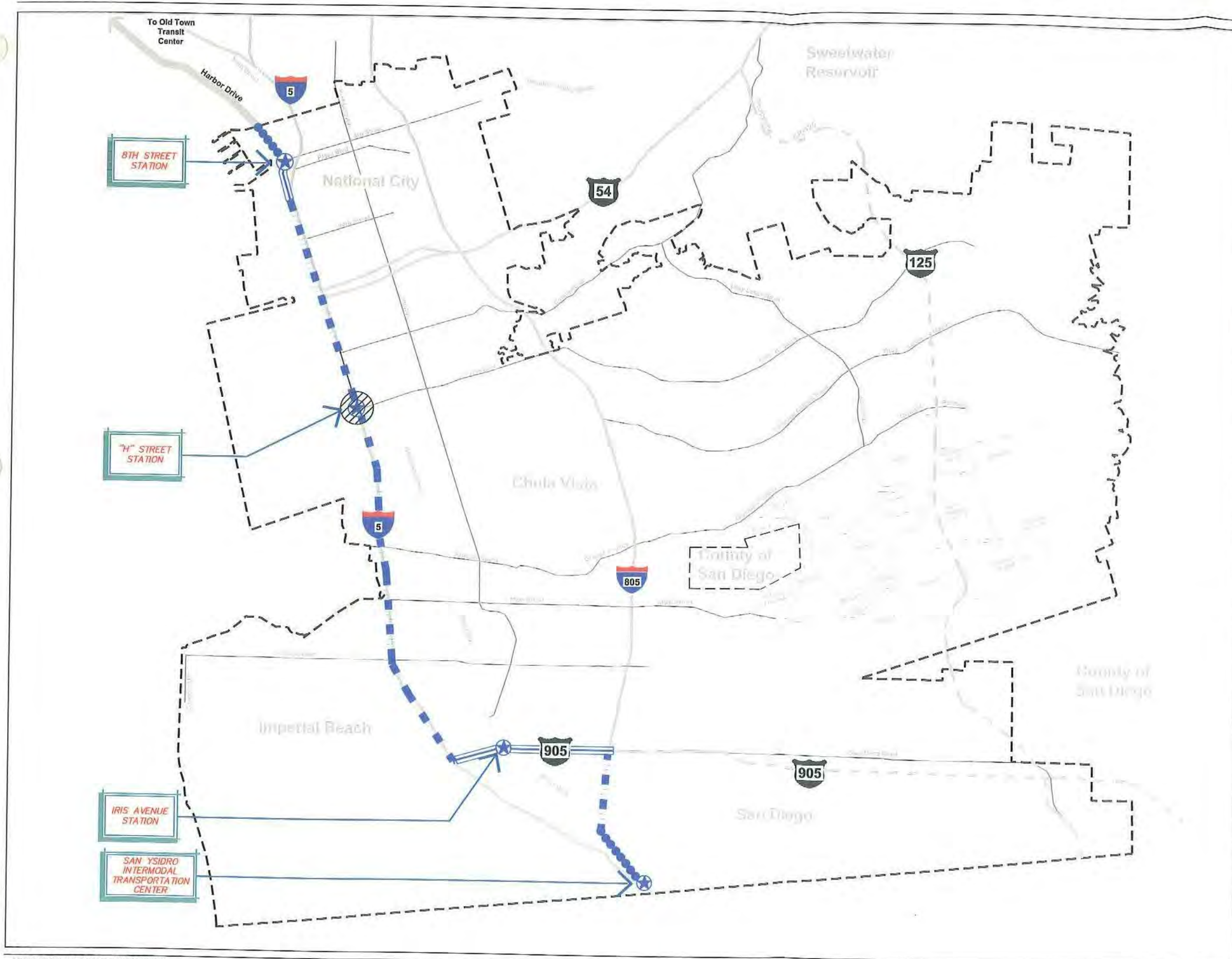
**FIGURE 3.1**  
**ALIGNMENT AND STATIONS MAP**  
**540 ALIGNMENT**



| Station Types          |                        |                          |                           |                            |                           |                            |                     |                       |                 |
|------------------------|------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------|-----------------|
| Station Locations      | Freeway Median Station | Off Street / Transit Hub | Curbside Far-side Station | Curbside Near-side Station | Curbside Bulb-out Station | Curbside Mid-Block Station | Median Dual Station | Median Offset Station | Turnout Station |
| 8 <sup>th</sup> Street |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |
| H Street               |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |
| Iris Street            | ●                      |                          |                           |                            |                           |                            |                     |                       |                 |
| San Ysidro             |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |

**Table 3.1:**  
540 Summary Table - Station Locations and Types





# Transit Priority Treatments Alignment and Stations MTDB - South Bay Transit First Project

**ROUTE 540** - Old Town to the San  
Ysidro Intermodal Transportation  
Center

## LEGEND

- HOV Lanes
- Dedicated Alignment  
or Guideway
- Median Running  
Dedicated Alignment
- Project Boundary
- Proposed Freeways
- Yellow and Red Car  
Stations
- Grade Separated Stations

NOTE: Priority Signals will be used  
at all signalized intersection along the  
alignment.

0 1/2 1 mile



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9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 3.2**  
**PRIORITY TREATMENTS MAP**  
**540 ALIGNMENT**

### 3.2 ALIGNMENT ANALYSIS

This section discusses the areas of significant traffic congestion that will reduce the necessary high travel speeds and service reliability for the 540 route. Also identified in this section are the transit priority measures that could be used to minimize the impacts of these congested areas and maintain service reliability and high speeds. The feasibility these priority measures is also examined. References are also made to the 510 alignment, which will provide Red Car service along the same travel corridor as the 540.

#### A. Traffic Congestion

##### ▪ Near Term (2010)

Harbor Drive traffic volumes from the northern project study area to I-5 reach LOS C in the near term. The daily traffic forecasts along I-5 will exceed the threshold LOS F from Harbor Drive to Palm Avenue and LOS C south of Palm to SR-905. The SR-905 segment of the alignment experiences LOS C and an LOS B is on I-805. A summary of traffic congestion for this corridor is provided below in **Table 3.2**.

##### ▪ Long Term (2020)

The daily traffic volumes on Harbor Drive from the northern project study area to I-5 will continue to operate LOS C in the long term. The daily traffic forecasts along I-5 will continue to exceed the threshold LOS F from Harbor Drive to Palm Avenue and increase to LOS D south of Palm to SR-905. The segment of the alignment on SR-905 will also experience LOS D and on I-805 LOS C. A summary of traffic congestion for this corridor is provided below in **Table 3.2**.

|                                                                         | 2010<br>Near Term |   |   |   |   |   | 2020<br>Long Term |   |   |   |   |   |
|-------------------------------------------------------------------------|-------------------|---|---|---|---|---|-------------------|---|---|---|---|---|
| Levels Of Service(LOS)                                                  | A                 | B | C | D | E | F | A                 | B | C | D | E | F |
| <b>Harbor Drive</b><br>Division Street to 8 <sup>th</sup> Street to I-5 |                   |   | ● |   |   |   |                   |   | ● |   |   |   |
| <b>Interstate 5</b><br>Harbor Drive to Palm Avenue                      |                   |   |   |   |   | ● |                   |   |   |   |   | ● |
| <b>Interstate 5</b><br>Palm Ave to SR-905                               |                   |   | ● |   |   |   |                   |   |   | ● |   |   |
| <b>SR-905</b><br>I-5 to I-805                                           |                   |   | ● |   |   |   |                   |   |   | ● |   |   |
| <b>I-805</b><br>SR-905 to 510 Over-crossing                             |                   | ● |   |   |   |   |                   |   | ● |   |   |   |

Levels of Service are ranked from LOS A=Best to LOS F=Worst.

Ranking is derived from San Diego Street Design Manual which cross-references roadway classifications, average daily traffic and levels of service. See Chapter 1, Table 1.1 for ranking criteria.

**Table 3.2:**  
**540 Alignment - Congestion Levels**

**B. Physical Constraints**

The following outlines the physical constraints associated with implementing the 540 corridor.

- The 540 is planned to operate in the study area along the I-5 corridor south of the 8<sup>th</sup> Street Station in National City to SR-905. The primary physical constraint of the I-5 corridor is its limited right-of-way. Shoulder lanes may be feasible for transit use as a "near term" solution. Co-ordination with Caltrans will be needed to determine if this will be an acceptable option.
- North of the 8<sup>th</sup> Street Station the 540 is assumed to follow Harbor Drive towards Downtown San Diego. Further planning and examination of this route north of the study area will be necessary to identify an alignment.
- At Harbor Drive and 8<sup>th</sup> Street existing rail tracks are in close proximity to the Harbor Drive. This may require that the rail tracks be relocated depending on final station design for the 540.
- The existing 510 corridor east of I-5 is also constrained with limited right-of-way, utility lines and existing development. Existing railroad right-of-ways are located west of I-5, but numerous constraints hinder their feasibility for the 540 alignment. These constraints include existing freight use, location in the pavement of existing streets, single track, sharp curves, wetlands, and no continuity south of the Otay River. Because of these constraints it is assumed that the 540 will operate in the planned I-5 HOV/Managed Lanes.
- In order to provide direct access to the planned 8<sup>th</sup> Street Station from I-5, transitional structures will need to be constructed at the I-5 HOV/Managed Lanes within the vicinity of Civic Center Drive/Tidelands Avenue and Harbor Drive. These structures will require substantial engineering and potential land acquisitions.
- The 540 station at H Street will be located in the I-5 right-of-way with pedestrian access to the existing 510 station located on the east side of freeway. Unusually complex traffic control conditions are currently being experienced in this area due to convergence of traffic flow from the 510 alignment, H Street, and the I-5 on/off ramps. Increased traffic conflicts may occur with additional Red Car service, Yellow Car service, and existing Blue car services entering/exiting the I-5/H Street area.
- Construction of the transit station to include the 540 within the I-5 right-of-way will require substantial engineering. It is unlikely that the 540 station could be constructed at the grade of I-5 in the median because the right-of-way has insufficient width. Construction of median HOV lanes including the station will require additional right-of-way width of more than 100 feet. It does not appear that this much additional right-of-way is available but further investigation will be required. An alternative is the



construction of an elevated station above the grade of H Street that will be adjacent to the 510 elevated station, all of which represents a substantial engineering challenge.

- The planned I-5 HOV/Managed Lanes will terminate at SR-905. A transfer point between the 540 route, the 510, local buses, and future transit and local bus service in the SR-905 corridor is proposed in the vicinity of the existing Iris Avenue Station. The 540 alignment will leave I-5 at SR-905 and will proceed east to the San Diego Trolley (510) underpass at SR-905. No HOV lanes are planned for SR-905, but there is substantial median width that could include exclusive lanes for the 540 service east of I-5.
- The existing 510 Iris Avenue station is located north of SR-905. For this reason transfer between the 540 and the Iris Avenue station will be problematic. The Iris Avenue 510 station and its transfer facilities to other transit services will be relocated south to accommodate transfers between the 540 and other routes. The precise location of the new station depends upon the 540 alignment segment south of the Iris Avenue station to the San Ysidro ITC.
- Three alternative alignments were reviewed for the 540 alignment south of the Iris Avenue station. Each present physical and engineering constraints that will affect implementation feasibility and are described below:

- **Alternative A** - will travel on exclusive right-of-way immediately adjacent and parallel to the 510. Sufficient width appears to be available for most of the distance from Iris Avenue to the border crossing. Right-of-way is available for use of the 540 on the east side of the 510 tracks north of the 510 Beyer Boulevard station.

Beyer Boulevard appears to be wider than what its traffic flow requires and land is available between the 510 tracks and Beyer Boulevard. Land availability is constrained from the Beyer Boulevard 510 station to the I-805 overpass. However sufficient land appears to be available with track realignment, removal of a structure at the station, and use of pedestrian areas south of the station.

Bridges over I-805 and East Beyer Boulevard will be required and land appears to be available. Land also appears to be available from the East Beyer Boulevard overpass to San Ysidro parallel to the 510 tracks. However, land is constrained at the freight railroad maintenance facility and in the border crossing area.

- **Alternative B** - will require the 540 to travel in mixed flow traffic along Beyer Boulevard and East Beyer Boulevard as it provides services from the Iris Avenue station south to the San Ysidro ITC. Beyer Boulevard is currently quite wide and has light traffic. However, a mixed flow traffic operation will constrain 540 vehicle speeds.
- **Alignment C** - will continue along SR-905 to the I-805, south along I-805 to the 510 overpass, then parallel to the existing 510 tracks south to the border crossing.

Traffic forecasts indicate that the four-lane section of SR-905 will provide LOS F in 2020. The eight lanes of I-805 are forecast to provide LOS C. Exclusive 540 lanes in this area will require an HOV interchange between SR-905 and I-805. They will ensure the high speed operation required of the 540. Exclusive right-of-way parallel to the existing 510 tracks will be required from the existing 510 overpass at I-805 to the border crossing area.

This alternative will require a transitional structure on I-805 at the 510 overpass and bridging of East Beyer Boulevard. Land appears to be available for these structures. Land also appears to be available parallel to the 510 tracks from the East Beyer Boulevard overpass to San Ysidro. However, land is constrained at the freight railroad maintenance facility and in the border crossing area. This proposed route will also be used by the 680 alignment from the 510 overpass of I-805 to the San Ysidro ITC.

The existing San Ysidro ITC and local bus station is the southern terminus of the 540. The station is located in a highly congested and developed area, which will complicate the expansion of the station area to accommodate the 540 vehicles and its passengers. Major redevelopment of the station area is currently under construction. Further major redevelopment of the San Ysidro ITC area will be required to accommodate stations for the 540 and other planned transit services including the 680 route. A summary of these comments are provided in **Figure 3.3**.

### **C. Priority Measures**

The following priority measures are proposed to ensure that the transit lanes are able to avoid the identified congestion areas and are illustrated in **Figure 3.2**.

#### ▪ **Near Term (2010)**

Operation of the 540 in mixed flow traffic on I-5 and in LOS F conditions north of Palm Avenue is not a feasible solution and this type of service should not be instituted. An interim alternative is to provide transit service temporarily within the freeway shoulder lanes. However, due to safety issues and liability concerns the use of a freeway shoulder during peak-period operations has not been well received by Caltrans. Exploring the feasibility of this priority measure should continue with Caltrans and the State Highway Patrol. This measure will be the only "near term" solution that is practical for the 540 corridor. Otherwise, it is anticipated that in the near term the 510 service will be increased to provide the necessary transit service for this corridor.

#### ▪ **Long Term (2020)**

Implementation of the 540 service is dependent upon construction of the I-5 HOV /Managed Lanes similar to that shown in **Figure 3.4a**. Design of the managed lanes should incorporate the necessary facilities to ensure that the implementation of the 540 is possible.

The priority measure for the segment from the northern project study area boundary to I-5 should include the following:





- 24-foot wide at-grade guideway on the east side of Harbor Drive as illustrated in **Figure 3.4**.

# Physical Constraints Map

MTDB - South Bay Transit  
First Project

**ROUTE 540 - Old Town to the San  
Ysidro Intermodal Transportation  
Center**

## LEGEND

-  Alignment
-  Project Boundary
-  Proposed Freeways
-  Yellow and Red Car Stations

0 1/2 1 mile

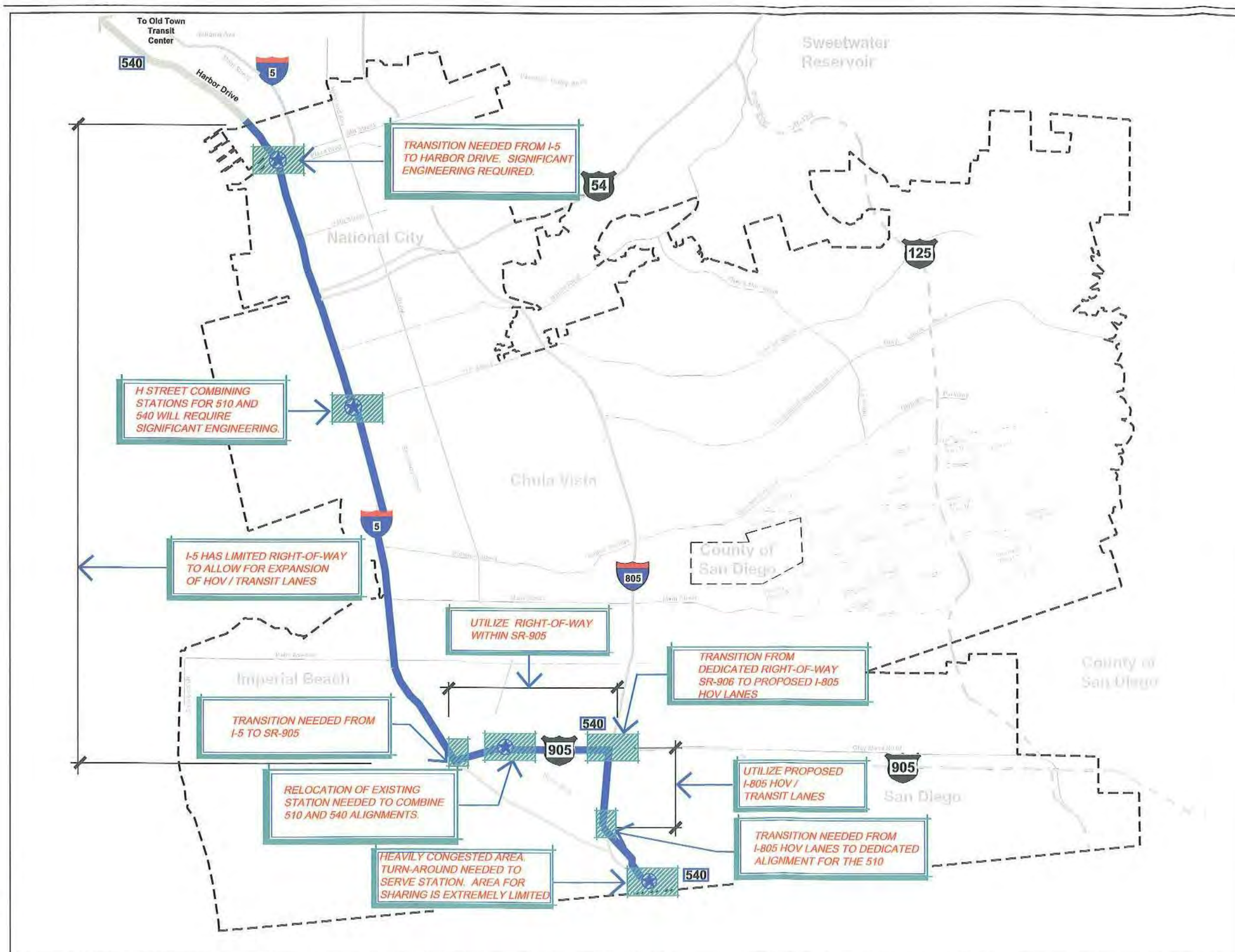


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**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 3.3**  
**PHYSICAL CONSTRAINTS MAP**  
**540 ALIGNMENT**





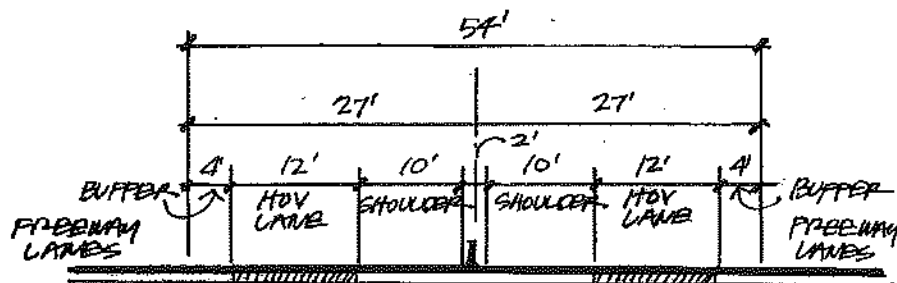
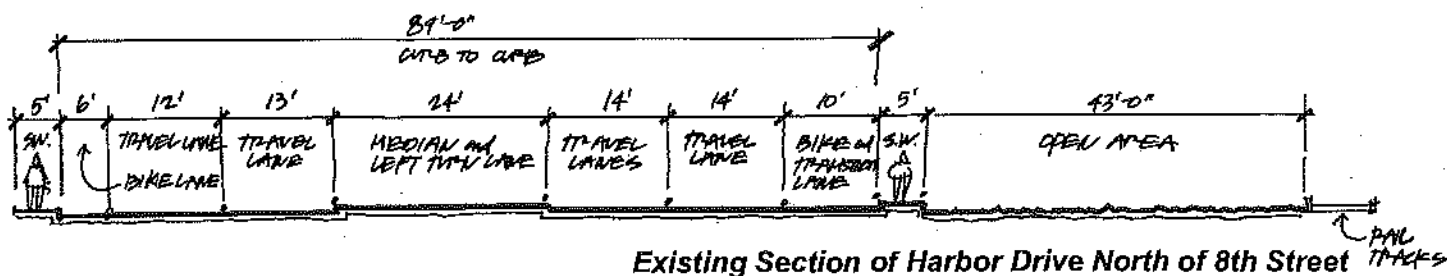
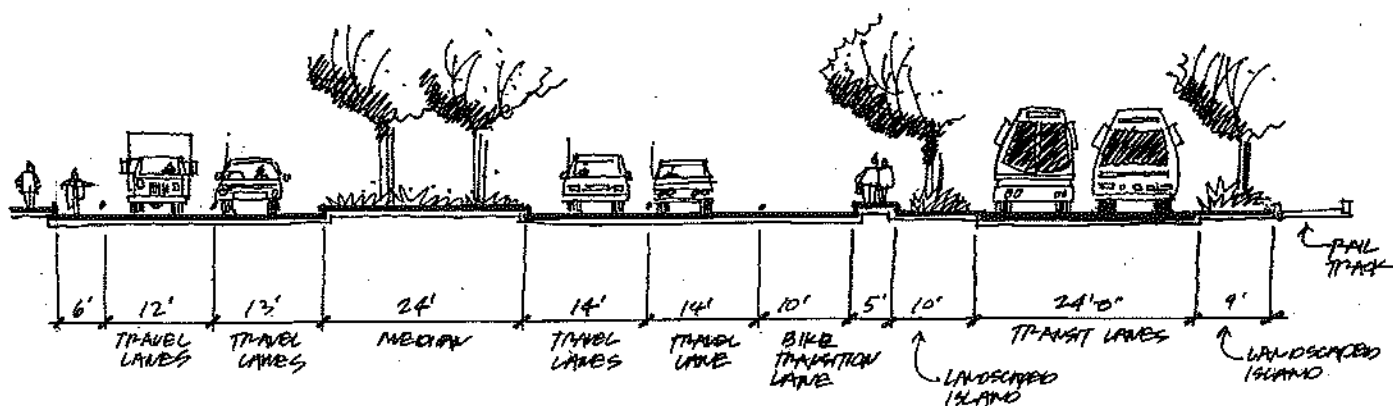


Figure 3.4A:  
Typical HOV Lanes Requirements for Interstate 5

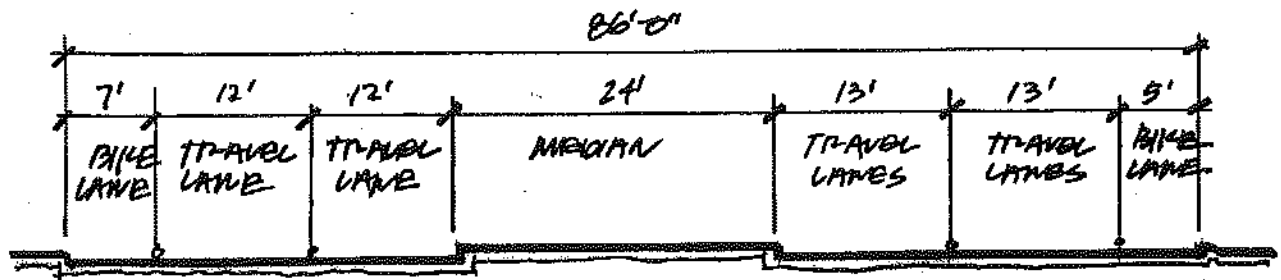


Existing Section of Harbor Drive North of 8th Street

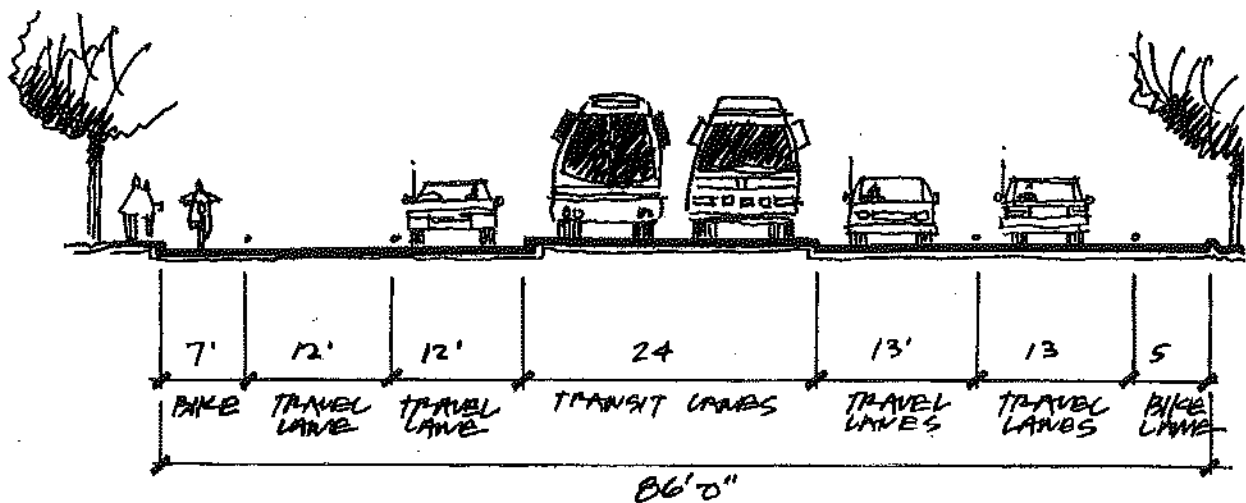


Proposed Section of Harbor Drive North of 8th Street

Figure 3.4:  
540 Alignment On-Grade Guideway on East Side of Harbor Drive



Existing Section of Harbor Drive South of 8<sup>th</sup> Street



Proposed Section of Harbor Drive South of 8<sup>th</sup> Street

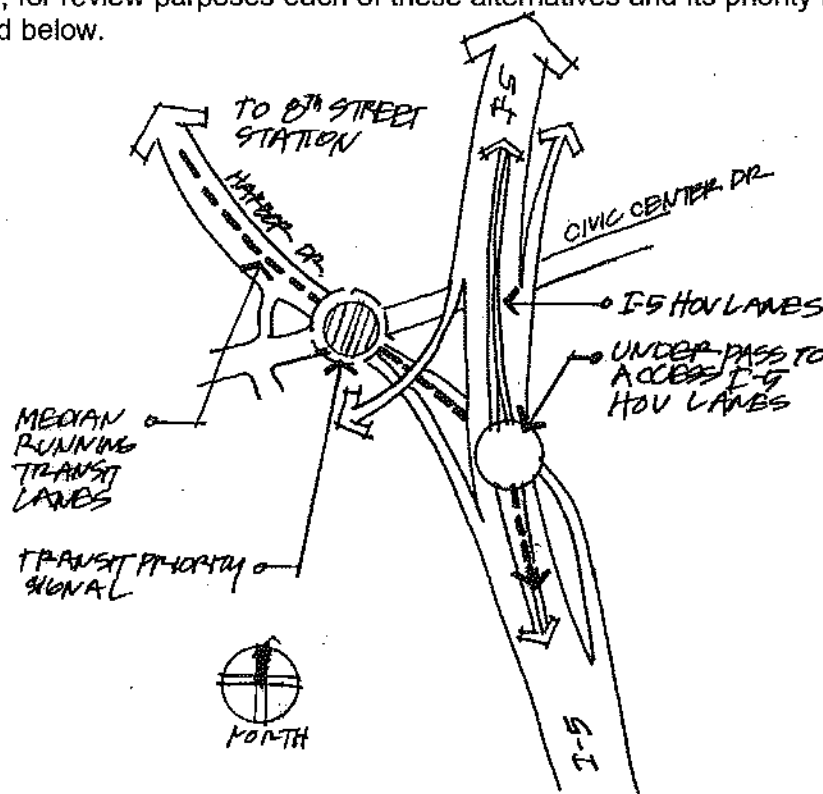
**Figure 3.5:**  
540 Alignment On-Grade Median Transit Lanes in Harbor Drive

- 24-foot wide median running transit lanes in Harbor Drive from 8<sup>th</sup> Street Station to Tidelands Avenue / Civic Center Drive as illustrated in **Figure 3.5**.
- Transit priority signals at intersections along Harbor Drive.

The following priority measures should be incorporated into the design of the I-5 HOV/Managed lanes and for the rest of the corridor to San Ysidro:

- Access and transition between the I-5 HOV/Managed Lanes South Tidelands Avenue / Civic Center Drive as shown in **Figure 3.6**. The required width to accommodate the HOV lanes in interstate 5 is 54-feet and is illustrated in **Figure 3.4**.
- Construction of a joint 540, 510, Blue Car service station on the land north of 8<sup>th</sup> Street between Harbor Drive and the existing 510 8<sup>th</sup> Street station.
- Construction of a shared 540/510 station at H Street, with platforms elevated above H Street consistent with the grade separation of the 510 and H Street described in *Chapter 2*. Direct pedestrian connections to the 510, the park and ride lot, and Blue Car transfer facilities should be provided.
- Transition lanes from the I-5 HOV/Managed Lanes into dedicated transit lanes on SR-905 east of I-5 to the 510 underpass as shown in **Figure 3.7**. The transition will use an elevated guideway of approximately 36-feet and is illustrated in **Figure 3.7A**.

Three alignment alternatives from the SR-905 overpass with the 510 alignment were reviewed and studied. Alternative C was considered the preferred alternative. However, for review purposes each of these alternatives and its priority measures are described below.



**Figure 3.6:**  
540 Alignment Transition to HOV Lane on I-5



**Alternative A** - (parallel to the existing 510 alignment) will require construction of an interchange to transport 540 vehicles from the grade of SR-905 to the lower grade of the 510 tracks. This alternative will also require a separate roadway parallel to the 510 south to the San Ysidro ITC area that will require the construction of bridges over I-805 and East Beyer Boulevard. The priority measures for this alternative will include the relocation of the Iris Avenue 510 station to an area south of SR-905. Blue Car platforms should be relocated immediately south of SR-905 and immediately west of Beyer Boulevard. The land required for this relocation is currently privately owned. Additional parking may be provided east of the existing tracks between SR-905 and Iris Avenue on land which is currently privately owned.. Pedestrian access between the station platforms and parking will be required under the SR-905 overpass. Priority signalization at street intersections south of SR-905 is a priority measure.

**Alternative B** - (on Beyer and East Beyer Boulevards in mixed flow traffic) will require construction of an interchange to transport 540 vehicles from the grade of SR-905 to the grade of Beyer Boulevard. Priority measures will include relocation of the 510 Iris Avenue station south of SR-905. Blue Car platforms should be relocated immediately south of SR-905 and immediately west of Beyer Boulevard. The land required for this relocation is currently privately owned. Additional parking may be provided east of the existing tracks between SR-905 and Iris Avenue on land which is currently privately owned. Pedestrian access between the station platforms and parking will be required under the SR-905 overpass. Priority signalization at street intersections south of SR-905 is a priority measure

**Alternative C** – The preferred alternative travels on exclusive transit lanes along SR-905 and I-805 to the 510 overpass. This alignment will require construction of dedicated transit lanes on SR-905 east of the I-5 to I-805 and is illustrated in **Figure 3.7**.

The alignment will transition from SR-905 and continue to travel south on I-805 to the 510 overpass as shown in **Figure 3.8**. The alignment will then transition to a dedicated roadway near the 510 overpass, see **Figure 3.9**, and travel south to San Ysidro parallel to the 510 alignment.

Priority measures for this alignment include relocation of the Iris Avenue 510 station south to an area directly beneath SR-905. Blue Car platforms should be relocated east of the existing tracks between SR-905 and Iris Avenue. The land required for this relocation is currently privately owned. Public parking will remain at its current location and will be expanded. The expanded parking facility will include the existing parking facilities and the area currently being used for Blue Car platforms. This is discussed in more detail in section **3.3 Station Location and Types**.

Additional priority measures that should be incorporated into other areas of the 540 corridor include:

- Construction of a 540 alignment along Harbor Drive and Pacific Highway north of the study area with a terminus at the Old Town Station.
- Redevelopment of the San Ysidro ITC area to accommodate a station that can serve numerous alignments including the 540 and the 680.

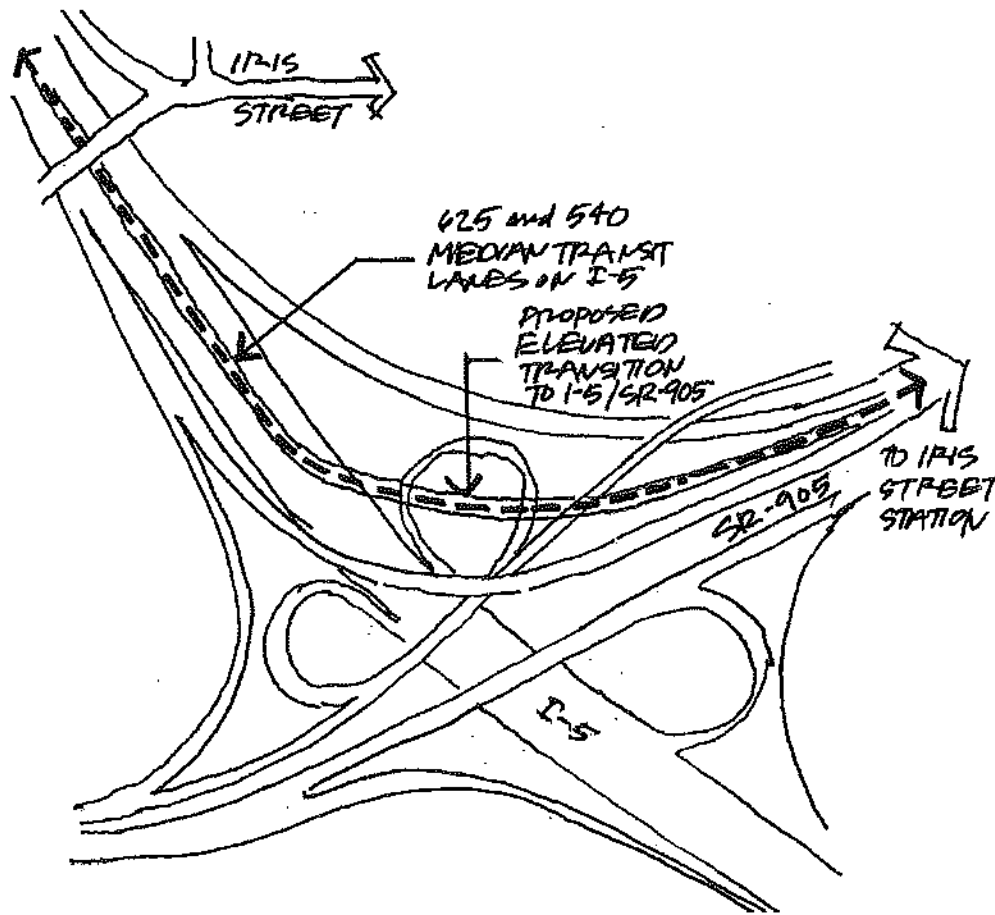


Figure 3.7:  
540 Alignment Transition from I-5 to SR-905

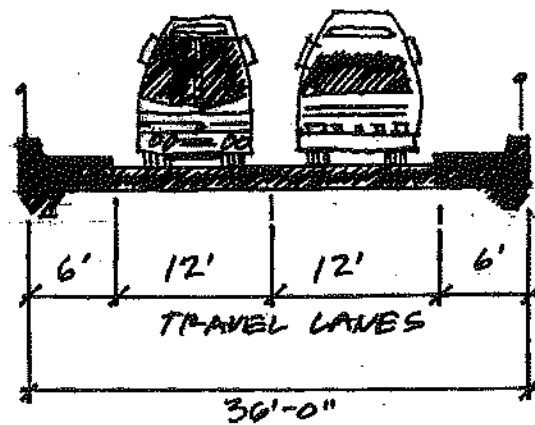


Figure 3.7A:  
Elevated Guideway from I-5 HOV Lanes to SR-905

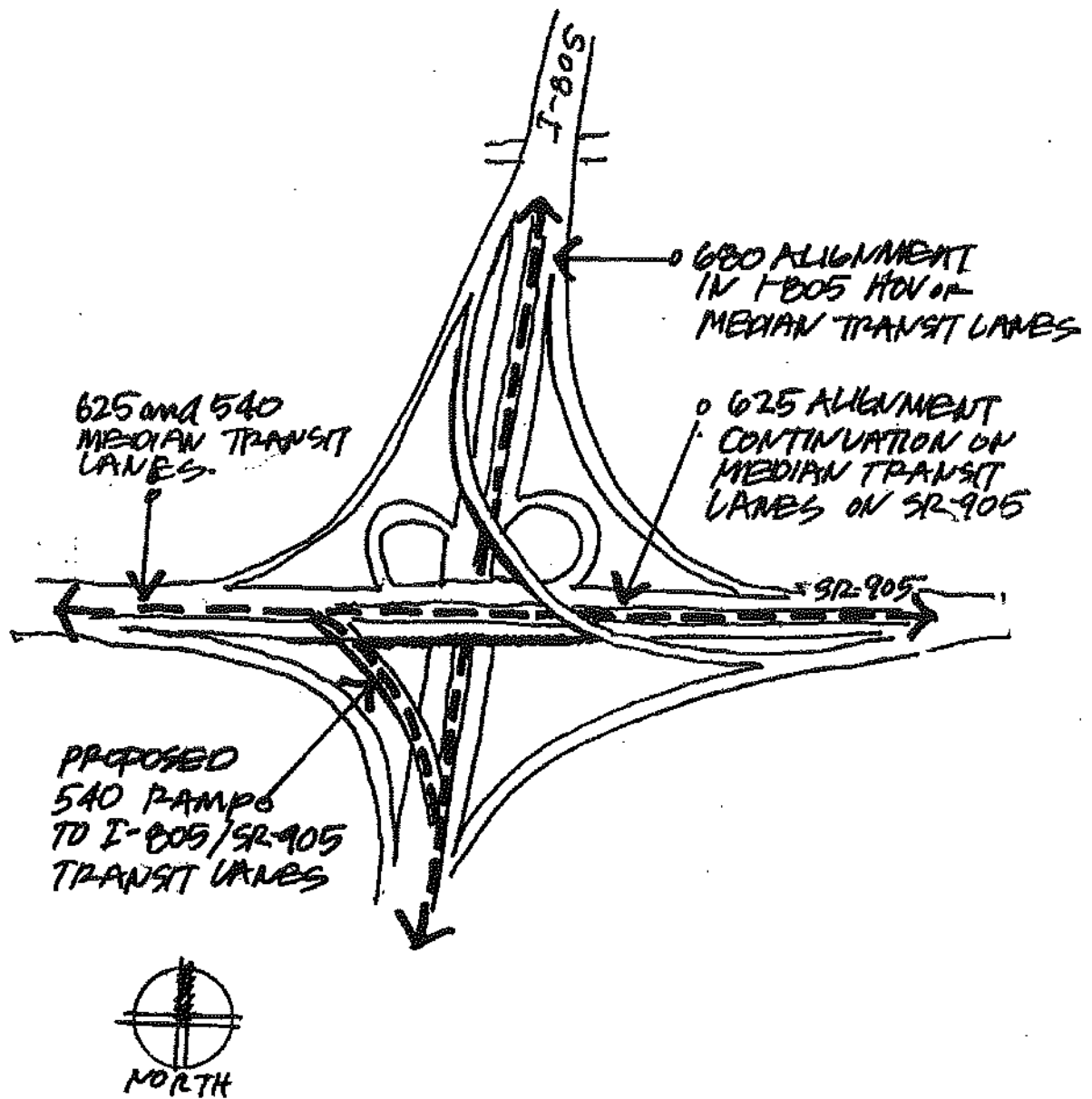


Figure 3.8:  
540 Alignment Transition from SR-905 to I-805



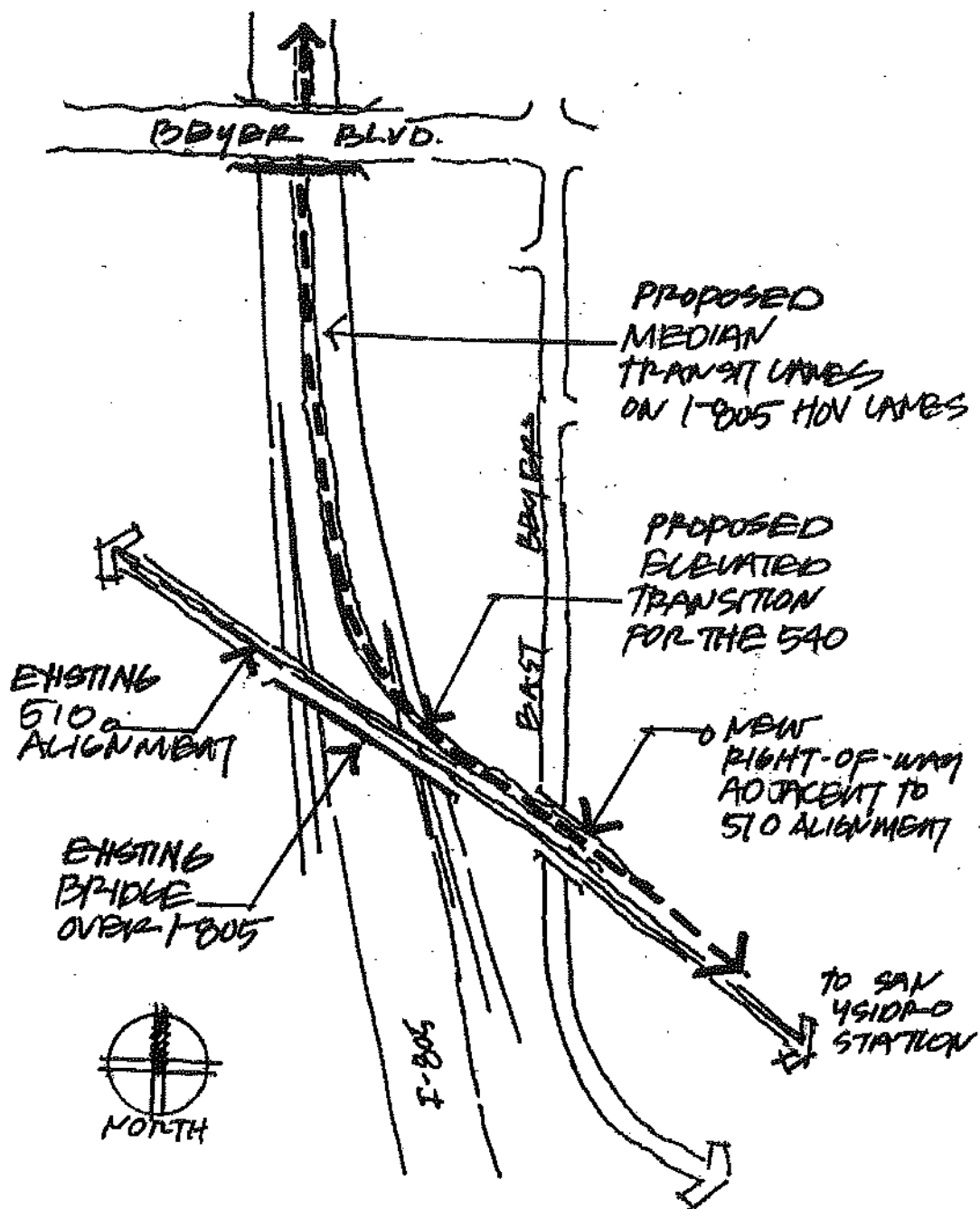


Figure 3.9:  
540 Alignment Transition from I-805 to 510 Corridor

## **D. Engineering and Environmental Issues**

The following outlines the engineering and environmental issues associated with implementing the 540 alignment.

### ▪ **Segment A: Project Boundary North (P.B.N.) to 8<sup>th</sup> Street Station**

- North of the 8<sup>th</sup> Street Station, the 540 is assumed to follow Harbor Drive towards downtown San Diego. Further planning and examination of this route from the project boundary north (PBN) to downtown San Diego will be necessary to identify an alignment.
- North of Harbor Drive and 8<sup>th</sup> Street existing freight rail tracks are in close proximity to Harbor Drive. Relocation of the rail tracks may be necessary depending on final design of the 540 alignment especially at the 8<sup>th</sup> Street Station.
- North of 8<sup>th</sup> Street the alignment crosses a tidal water course on Harbor Drive. Runoff and water quality considerations must be incorporated into further project advancement.
- Traffic impacts associated with patron access to the 8<sup>th</sup> Street Station and operation of 540 service vehicles may be substantial. Operation of priority signalization in National City along the route may affect other vehicular traffic in the area.
- Increased levels of parking at the station and traffic impacts created by those vehicles as they access and depart from the station will require further examination. Provision of additional parking at the 8<sup>th</sup> Street Station is envisioned in a structure. A more detailed parking demand study will be necessary to determine the number of additional parking spaces needed at the station.

### ▪ **Segment B: 8<sup>th</sup> Street Station to I-5**

- In order to provide direct access to the planned 8<sup>th</sup> Street Station from I-5, a transition structure will need to be constructed at the I-5 HOV/managed lanes within the vicinity of Civic Center Drive/Tidelands Avenue and Harbor Drive. This structure will require substantial engineering and potential land acquisitions.
- The existing I-5 right-of-way is rather tightly constrained in this area. Providing additional width to accommodate both the HOV lanes as well as transition lanes and structures for exclusive use by the 540 may prove challenging.
- Provision for the 540 alignment should be incorporated into the planning and design of the I-5 HOV/managed lanes.
- A system of priority signalization for transit vehicles will be required in this area, the implementation of which must be coordinated with National City which operates signals along Harbor Drive. This priority signalization and the structures associated with transition to the I-5 HOV/managed lanes will potentially impact traffic service to on existing roadways in the area. Those impacts will require further examination and potential mitigation.

- At Harbor Drive and 8<sup>th</sup> Street existing freight rail tracks are in close proximity to Harbor Drive. These tracks cross Harbor Drive just south of 8<sup>th</sup> Street. Engineering consideration of these tracks crossing the proposed transit median will need to be addressed depending on the final design of the 540 alignment.

▪ **Segment C: I-5 to SR-905**

- The 540 is planned to operate in the study area along HOV lanes on I-5 south of Civic Center Drive in National City to SR-905. The HOV lanes do not currently exist and are not planned for construction until after 2020. There are numerous engineering issues associated with the implementation of these HOV lanes, but they are not considered here. Construction of the HOV lanes is not part of this project. Rather, the HOV lanes are assumed as the basis for implementation of 540 services in the long term.
- If the use of outside shoulder lanes as a near term solution is acceptable there are several engineering issues that will need to be addressed.
  - The existing shoulders may not have been constructed as travel lanes. Using the shoulder lanes may require that the lanes to be fully improved to handle transit vehicles.
  - The shoulders are typically narrower at most of the overpasses or bridges. To maintain an adequate width for the transit lane, encroachment into the existing travel lane may be required.
  - Safety and operational issues related to the on and off ramps will need to be addressed. The shoulder lanes "cross-over" the on and off ramps creating a merge problem with exiting vehicles.
  - Disabled vehicles using the shoulder lanes for emergency purposes will also create a hazard for transit vehicles sharing the shoulders.
  - Merging in and out of the mixed-flow freeway travel lanes, especially during traffic peak periods, to avoid this "cross-over" maneuver will not permit the type of smooth and rapid service that is the goal of the Yellow Car service.
  - Accessing the proposed 540 stations will also require transit vehicles to leave the freeway and travel on local surface streets. Again, this will lead to an increase of travel time for the length of the route.
  - Using the inside or median shoulder lanes could resolve many of the above operational and safety issues and should also be explored.
- Construction of the 540 station at H Street within the I-5 right-of-way will require substantial engineering. It is unlikely that the 540 station could be constructed at the grade of I-5 in the median because the right-of-way has insufficient width. Construction of median HOV lanes with a bus station will require additional right-of-way width of more than 100 feet.

It does not appear that this much additional right-of-way is available but further investigation will be required. An alternative is the construction of the station above the grade of H Street, which represents a substantial engineering



challenge. Such an elevated station will require the construction of elevated ramps to and from the I-5 HOV lanes to a station elevated above H Street at the grade of the 510 station that is also to be elevated above H Street to eliminate the existing grade crossing of that street.

- The 540 station will be located above the I-5 right-of-way with pedestrian access to the 510 station on the east side of the freeway. There are potential visual impacts of the elevation of the H Street station above the grade of H Street. A more detailed description of this station area is described in section **3.3 Station Location and Types**.

▪ **Segment D: SR-905 to I-805**

- The planned I-5 HOV/Managed Lanes will terminate at SR-905. The 540 alignment will leave I-5 at SR-905 and proceed east to I-805. No HOV lanes are planned for SR-905. There is substantial median width that is envisioned to accommodate exclusive lanes for the 540 service east of I-5. There are several bridges spanning existing roads along this section of SR-905 where bridges serving the 540 will be required.
- A transfer point between the 540 route, the 510, local buses, and future transit and local bus service in the SR-905 corridor is proposed in the vicinity of the existing Iris Avenue Station. The existing 510 Iris Avenue station is located north of SR-905. For this reason, transfer between the 540 and the Iris Avenue station will be problematic. The Iris Avenue 510 station and its transfer facilities to other transit services will be relocated south to accommodate transfers between the 540 and other routes. The precise location of the new station depends upon the 540 alignment segment south of the Iris Avenue station to the San Ysidro ITC. The preferred alternative will locate the station on the grade of SR-905 with the 510 and Blue Car platforms relocated south of Iris Avenue. A more detailed description of this station area is provided in section **3.3 Station Location and Types**.
- There are potential visual impacts associated with construction of elevated guideways at the I-5/SR-905 interchange. Potential noise impacts may be associated with the relocation of the 510 Iris Avenue station.

▪ **Segment E: I-805 to 510 Connector**

- HOV lanes are not planned for I-805 south of SR-905. Sufficient right-of-way width appears available to provide exclusive lanes for the 540 route.
- Interchange ramps to provide direct access between the exclusive 540 lanes on SR-905 and I-805 will be required to ensure the high speed operation required of the 540.
- There are potential visual impacts associated with the construction of these elevated interchange ramps providing access to the dedicated alignment adjacent to the 510 trolley line.

▪ **Segment F: 510 Connector to San Ysidro ITC**

- Exclusive right-of-way parallel to the existing 510 tracks will be required from the existing 510 overpass at I-805 to the border crossing area at San Ysidro.
- Under the preferred alternative alignment, a transitional structure on I-805 at the 510 overpass will be required along with a bridge over East Beyer Boulevard. Land appears to be available for these structures. Land also appears to be available parallel to the 510 tracks from the East Beyer Boulevard overpass to San Ysidro. However, land is constrained at the freight railroad maintenance facility and in the border crossing area. This proposed route could also be used by the proposed 680 alignment.
- The existing San Ysidro ITC and local bus station is the southern terminus of the 540. The station is located in a highly congested and developed area, which will complicate the expansion of the station area to accommodate the 540 vehicles and its passengers. Major redevelopment of the station area is currently under construction. Further major redevelopment of the San Ysidro ITC area will be required to accommodate stations for the 540 and other planned transit services include the 680 route.
- There are potential visual impacts of the elevated interchange ramps at the I-805/510 area. Noise impacts are also a potential in this same area due to the proximity of residences.

**E. Feasibility of Priority Treatment Implementation**

▪ **Near Term (2010)**

Implementation in the near term of the I-5 HOV Managed Lanes in the study area for the 540 alignment is not feasible given the time it will take to plan, design, and construct.

Operation in mixed-flow traffic lanes is not recommended due to congestion on I-5 and to the time penalties of route deviations needed to access stations.

Use of freeway shoulders is possible but is typically not approved by Caltrans. This alternative should be further explored to determine if there is any willingness by Caltrans to utilize the freeway outside shoulders for transit lanes.

Interim use of the 510 to service the 540 corridor's needs is a reasonable alternative in the "Near Term" for this alignment.

▪ **Long Term (2020)**

Implementation of the 540 service will be dependent upon construction of the I-5 HOV/Managed Lanes. Assuming the construction of these lanes, the project is feasible but will require substantial engineering.

The alignment north of the study area along Harbor Drive can be easily accommodated in either median running transit lanes or on the east side of Harbor

Drive. However, north of the project study area on Harbor Drive and on Pacific Highway the alignment will require further investigation.

Within the study area, major station improvements will be necessary at all four 540 stations. Land is available for improvements at the 8<sup>th</sup> Street station. Access from the 8<sup>th</sup> Street station to the I-5 HOV/Managed Lanes will require substantial engineering and possibly relocation of existing freight rail tracks. Access to the I-5 in the vicinity of the Harbor Drive and Civic Center Drive interchanges appears to be feasible.

The H Street station has two likely scenarios. These scenarios are discussed in *Section 3.3 Station Location and Types*. The station could be located in the center of the I-5 right-of-way with protected pedestrian access to other components of the station immediately east of I-5. This may require construction of the station at the grade of I-5 in order to maintain acceptable traffic service on H Street. The second alternative is to combine the 510 and the 540 station into one above-grade facility with direct pedestrian access to the at-grade Blue Car transfer area and parking facilities east of the proposed station on the existing station site.

Construction of dedicated transit lanes east on SR-905 to I-805 and south to the 510 overpass is feasible. At the I-5 interchange near SR-905 adequate land is available for transition to the dedicated transit lanes.

All three alternatives from the Iris Avenue station to the San Ysidro ITC appear feasible. However, Alternative C will provide the best solution south of Iris Avenue. The SR-905 and I-805 have adequate median available for the construction of transit lanes that could also be used as HOV lanes. There is sufficient land parallel to the 510 to accommodate the 540 south of East Beyer Boulevard, except near the freight train maintenance shed.

The extent of redevelopment needed at the San Ysidro ITC to accommodate the 540 and other new routes requires further investigation. One option includes the use of the terrace east and behind the buildings fronting on San Ysidro Boulevard as the 540 right-of-way and station area. This option will require minimal redevelopment. More aggressive options include using the buildings fronting on San Ysidro Boulevard for a station more integrated with the 510 station currently under redevelopment.

The I-5 HOV/Managed Lanes are not planned for implementation until after 2020. Since the 540 implementation depends upon the I-5 HOV/Managed HOV Lanes, 540 service will not be implemented until after 2020. The 510 will continue to provide the principal service in this corridor prior to construction of the I-5 HOV Managed Lanes.

The 510 route currently carries daily passenger loads of 25,000 at the 8<sup>th</sup> Street station and is currently experiencing peak hour overcrowding. 2020 ridership forecasts for the 510 and 540 routes indicate that combined passenger loads at the 8<sup>th</sup> Street station will be approximately 45,000. Without the implementation of the 540, the 510 will need to accommodate as much of that load as possible. However, the forecasted eighty percent increase in ridership is unlikely to be manageable by the 510 without substantial increases in capacity. Thus, earlier construction of the 540 or substantial upgrades to the 510 should be reviewed to help alleviate the ridership needs in this corridor.



## F. Conclusions

Operation of the 540 alignment north of 8<sup>th</sup> Street to the project area boundary can be accommodated in either a 24-foot wide guideway on the east side of Harbor Drive or a 24-foot wide transit median in Harbor Drive.

Operation of the 540 in mixed flow traffic along I-5 is severely hindered by poor traffic service in the northern part of the study area and will result in no timesaving for riders. Thus, implementation of the 540 depends in the near term upon the use of freeway shoulder lanes and in the long term upon the construction of the I-5 HOV/Managed Lanes. The I-5 HOV/Managed Lanes are not currently planned for construction until after 2020.

The service reliability of the 540 will depend upon construction of high quality access to the I-5 HOV/Managed Lanes to and from the 8<sup>th</sup> Street, H Street, and Iris Avenue stations.

Three alternative alignments have been investigated south of the Iris Avenue station. Of the three alternatives explored *Alternative C* provides the best direct routing. *Alternative C* also provides the best station possibilities and is further explained in this chapter's section on *Station Location and Types*.

Using the I-805 south of SR-905 will also allow the 680 alignment (Tier 1) to share the future improvements in this corridor. This alignment will also be able to share the exclusive right-of-way improvements provided from the 510 overpass of the I-805 to the San Ysidro ITC Station.

### 3.3 STATION LOCATION AND TYPES

#### A. 8<sup>th</sup> Street Station

The 8<sup>th</sup> Street Station will continue to operate as a park and ride facility serving both the 540 and 510 the alignment. Currently the 510 station provides approximately 124 parking spaces for daily parking immediately west of the trolley station platform. The parking lot typically operates over capacity with approximately 95 percent of the lot being full during peak commute periods.

This station is also a transfer hub for the 55 Blue Car service. The Blue Car station is directly on 8<sup>th</sup> Street and is curbside serving. The Blue Cars do not enter the parking area. In the future there are two or three "Tier Two" Red Car services that could also be using the 8<sup>th</sup> Street Station.

#### ▪ Right-of-Way Requirements

With the anticipated increase in ridership and the addition of the 540 alignment the redevelopment of this station will be necessary. Additional land will be needed to expand the daily parking and to allow for Blue Car and future Red Car (626) service to transfer off-street. If located along Harbor Drive, the 540 station, see **Figure 3.10 and 3.10A**, is proposed to be located about 500-feet west of the 510 station platforms but only approximately 200-feet from the Blue Car transfer area. The relationship of transfers to the Blue Car service from the 540 and the 510 is expected to be high. This relationship will necessitate that the placement of the Blue Car transfer platforms be between the 540 and 510. The transfer volumes from the 540 to the 510 are not expected to be very high.

It is anticipated that the parcel(s) east of Harbor Drive and west of the trolley tracks could be developed to accommodate a major off-street transit hub similar to what is shown in **Figure 1.6 of Chapter 1**. The parcel(s) are currently occupied by a parking lot, apparently used by employees of nearby federal facilities.

This new transit station will continue to provide park and ride facilities for both the 510 and the 540 with transfer capabilities for the Blue Car service. Additional parking will be required at the station. Currently there are approximately 124 parking spaces, which operate over capacity on a typical weekday commuter peak periods.

The land requirements for the improved transit facility will be approximately 2 acres in size and will include the following improvements:

- Additional parking spaces for transit users (and perhaps to replace existing long term Navy parking)
- Platforms for the 540
- Platforms for Blue Car service vehicles
- Pedestrian access between the 510, 540 and Blue Car platforms

There are approximately 1500 daily boardings at the existing 510 station. This is expected to increase to approximately 3700 boardings in the year 2020 for the 510

and 540 routes combined. Further investigation of existing latent demand will be required to determine an adequate amount of parking for this station in the future. Because the 510 is expected to be operating at capacity prior to implementation of the 540, expansion of parking facilities should be timed to coincide with the implementation of the 540 service.

The HOV/Managed Lanes on I-5 in the study area are planned for the year 2025, approximately. Design of the HOV lanes should provide for appropriate high-speed access for 540 vehicles in the vicinity of the station. Design of the station and that access should be integrated.

#### ▪ **Land Use Integration**

##### ***Existing (1999)***

The existing land use plans (1999) identify numerous land uses associated within ¼ mile to ½ mile and is shown in **Figure 3.11**. Generally speaking the existing land uses in this area are older industrial and federal facilities associated with the Naval Reservation west of Harbor Drive.

Directly north of the existing station is a drainage channel and vehicle storage area. To the east are light industrial and warehouse uses and to the south are navy storage facilities and commercial/office uses. On the west side of the station is a parking lot and across Harbor Drive is the U.S. Naval Reservation. In general the existing land uses intensities east of Harbor Drive and within close proximity to the station are considered low and not extremely transit supportive.

##### ***Proposed (2020)***

The 2020 proposed land use within ¼ mile radius of the station intensifies two primary land uses as shown in **Figure 3.12**. These included commercial uses east of the station and mixed-use development to the southeast of the station.

##### ***Opportunities***

Significant changes to the 2020 land use plan are not proposed due to the predominately military use in the area. However, if the Navy decides to intensify their land uses it may want to do so within close proximity to this station location. Allowing for a higher intensity of land uses such as offices will be appropriate and certainly transit supportive. Also, the site just south of the proposed station is a storage facility and will be a strong candidate site for additional intensive land uses.

However, given its general location the station will still serve primarily as a park and ride facility while serving the nearby military facilities. As shown in **Figure 3.12**, significant land use options are not recommended for this station.

#### ▪ **Access**

Pedestrian access to the surrounding uses should be well defined and direct. Currently the area is not be considered very "pedestrian friendly." The sidewalks are lacking in the area and where there are sidewalks they are typically in poor condition. The use of street trees to provide some protection to the pedestrian is not existent.



In general the area is very car oriented and the pedestrian environment is not pleasant experience.

The continued need for a park and ride type facility in this location for the 540 and even the 510 will reduce the ability for direct "front door" type access for the surrounding land uses and nearby activity centers.

Future redevelopment could bring the proposed uses closer to the station creating a more direct pedestrian access. Careful location of proposed parking and incorporating strong pedestrian connections from the station to the surrounding uses should continue to be provided.

The sidewalks on existing streets provide the primary means to access this station and it will be beneficial to improve these connections with a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets leading to the major activity centers as shown in **Figure 3.13**:

- Harbor Drive
- 8<sup>th</sup> Street

#### ▪ **8<sup>th</sup> Street Station Issues**

For the proposed 8<sup>th</sup> Street Station the following are possible issues affecting the implementation of station improvements.

##### **Engineering Issues**

- Station construction including bus platforms east of Harbor Drive will be required. This will include implementation of priority traffic signalization for transit vehicles entering and exiting the station and traveling through the area.
- The station may also require relocation of the existing freight railroad track which crosses 8<sup>th</sup> Street just east of Harbor Drive. Maintenance of rail service during any track relocation represents an engineering challenge.
- Additional parking will be needed at the site along with off-street Blue Car platforms. Site layout to expedite parking and transfers is essential. Transfers are not only necessary between the 540 and Blue Cars, but also between the 510 and Blue Cars. The 510 station is located approximately 500 feet east of Harbor Drive.
- A single intermodal transportation center is envisioned for the site accommodating 540, 510, and Blue Car services as well as parking. A parking structure will be necessary.

##### **Environmental Issues**

- Traffic impacts resulting from additional vehicles accessing the station and from priority signal treatment for transit vehicles are potential impacts that will require a traffic impact analysis.
- A parking demand analysis will be necessary to determination of the amount of parking needed to serve the station.

- Increased access to the site by transit vehicles represents a potential noise impact requiring further investigation.
  - A waterway borders the 8<sup>th</sup> Street Station site to the north. Drainage to the San Diego Bay and water quality are potential environmental issues.
- **Community Issues**
- The site of the station is currently occupied by the 510 station and surface parking for federal employees. Land acquisition and displacement of existing parked vehicles represent potential community issues.
  - Additional traffic in the area accessing the station is another potential community impact requiring further investigation.

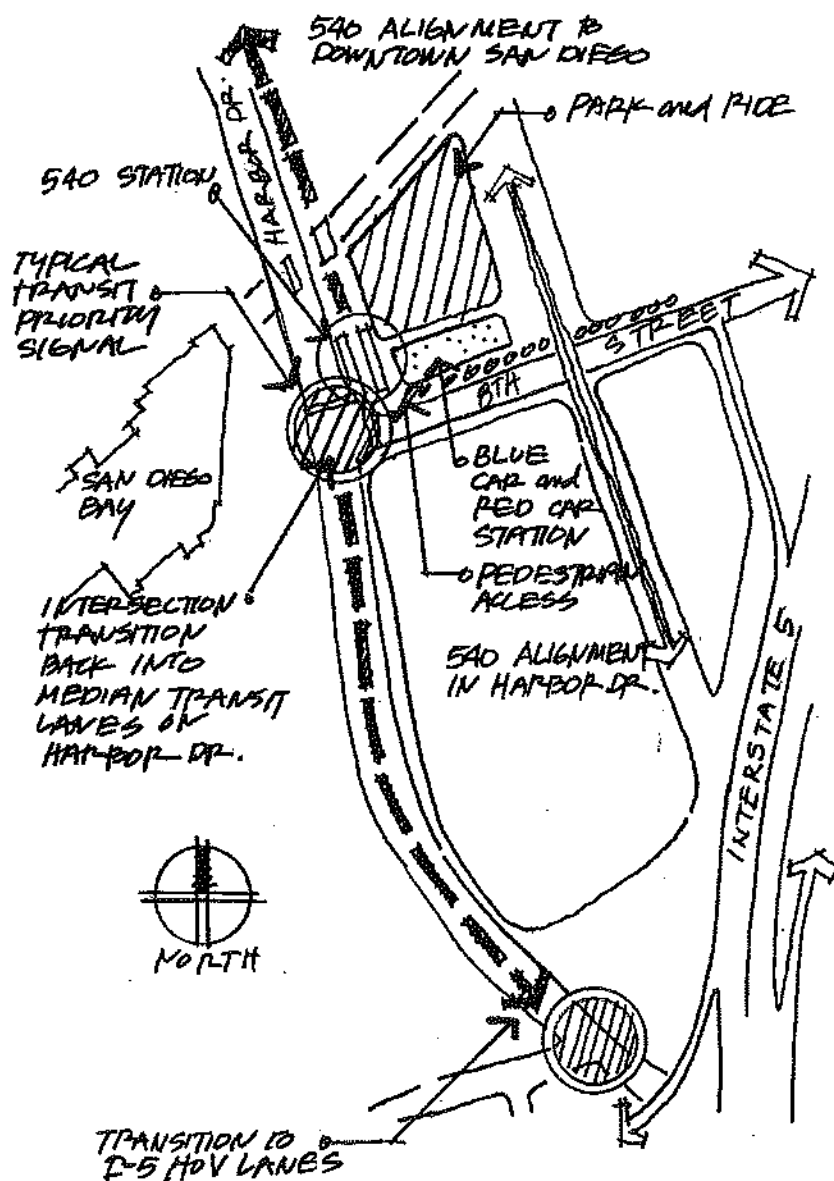


Figure 3.10:  
540 - 8<sup>th</sup> Street Station Location

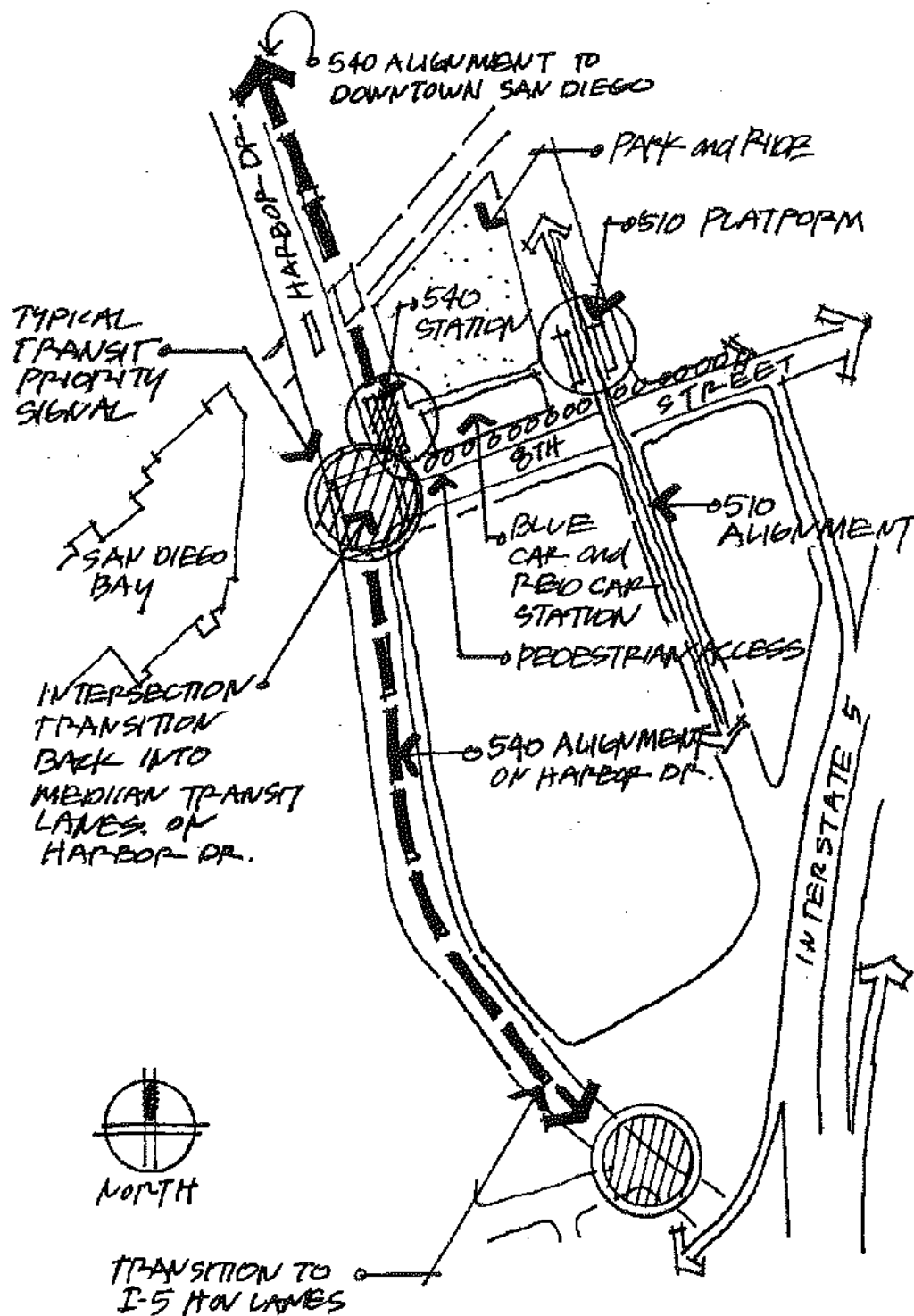


Figure 3.10A:  
540 and the 510 Alignment Combined 8<sup>th</sup> Street Station Location



EXISTING LAND USE



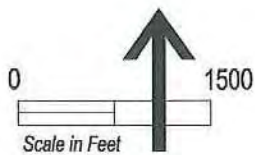
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

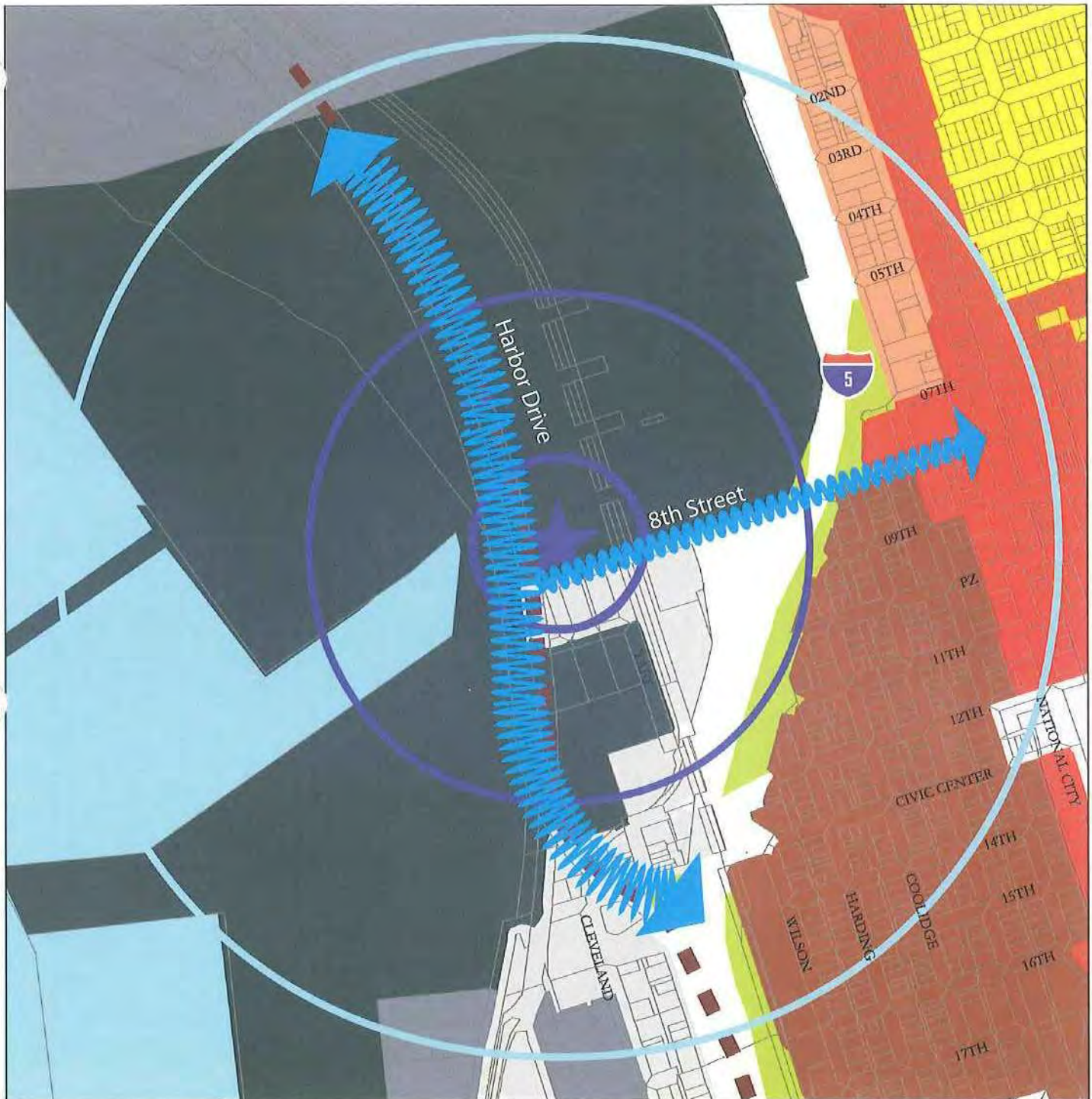


## LAND USE LEGEND

- |                                           |                                       |                                                 |
|-------------------------------------------|---------------------------------------|-------------------------------------------------|
| (*) Car Station                           | [White Box] Freeways / Roads          | [Green Box] Parks                               |
| [Dashed Line] Car Service                 | [Grey Box] Communications / Utilities | [Light Green Box] Open Space Reserves/Preserves |
| [Blue Circle] 1/4 Mile Buffer             | [Red Box] Retail and Strip Commercial | [Light Green Box] Landscape Open Space          |
| [Light Blue Circle] 1/2 Mile Buffer       | [Blue Box] Office Lo-Rise             | [Yellow Box] Vacant / Undeveloped               |
| [Yellow Box] Single Family Residential    | [Purple Box] Religious Facilities     | [Light Blue Box] Water Bodies                   |
| [Orange Box] Multi Family Residential     | [Blue Box] Libraries                  | [Pink Box] Gov't Office / Civic Centers         |
| [Orange Box] Hotel/Motel                  | [White Box] Other Public Services     | [Pink Box] Fire/Police Stations                 |
| [Grey Box] Heavy Industry                 | [Pink Box] Other Health Care          | [Brown Box] Mixed Use                           |
| [Grey Box] Industrial Parks               | [Dark Green Box] Military             |                                                 |
| [Brown Box] Rail Station/ Transit Centers | [Light Green Box] Elementary Schools  |                                                 |
|                                           | [White Box] Other School              |                                                 |

**Figure 3.11**  
**540 Alignment**  
**8th Street Station**





**Figure 3.12**  
**540 Alignment**  
**8th Street Station**

## B. "H" Street Station

The H Street Station for the 540 alignment is a significant transit hub facility. The station needs to be in close proximity of the park and ride lot, existing 510 trolley service, the proposed 627 Red Car service, and the Blue Car transfer area located east of the trolley tracks on H Street. This station provides numerous Blue Car services including the 701, 702, 703, 704, 706, 706A, 707, and 709 routes. Platforms for the Blue Car services are located off-street immediately south of the parking lot. This platform area also serves as a turn around area for Blue Cars to access H Street.

Currently the station provides 304 daily parking spaces. The surface parking lot typically operates near capacity with approximately 90 percent of the lot full during peak commuter periods.

### ▪ Right-of-Way Requirements

H Street station improvements are strategically tied to the 540 and the 510 service requirements. For the 540 station to serve and take advantage of the existing H Street station, the 540 will have to be directed off the I-5 HOV lanes with direct access to the H Street Station. The amount of right-of-way to accommodate such a station at the grade of I-5 does not currently exist. If additional right-of-way were acquired to the west, the 540 station could be located in the median of I-5. The separation of the 540 station from the park and ride site, the numerous local blue line routes, and the future 627 Red Car service will be approximately 150 feet horizontally and 25 feet vertically. Achieving a design that will integrate all of the station components at H Street will be central to the success of this station. With this approach there are three (3) possible design alternatives for the 540 station location:

- **At Grade with I-5** – Under this alternative, the 540 station will be located in the center of the I-5 alignment at the same grade as the freeway with vertical circulation provided for the passengers to access H Street and the park and ride facility east of the 510 station as shown in **Figure 3.13 and 3.14**. The area needed for the station will be similar to that identified in **Figure 1.5** of **Chapter 1**.

Currently, there is insufficient width available for the construction of a transit station at-grade in the I-5 right-of-way in association with the proposed HOV lanes. The minimum width requirements for a typical station and the HOV lanes will be approximately 102-feet including:

- Two (2) 12 feet HOV travel lanes with 8-foot shoulders and a 4-foot buffer,
- 24 feet for transit lanes in each direction at the station area platform,
- Two (2) 15 foot pedestrian platforms.

The current right-of-way for I-5 does not appear to have this amount of additional width available. To place the station in the middle of I-5 at H Street will require a significant expansion of the freeway, freeway bridge structure, and the relocation the on-and off ramps.

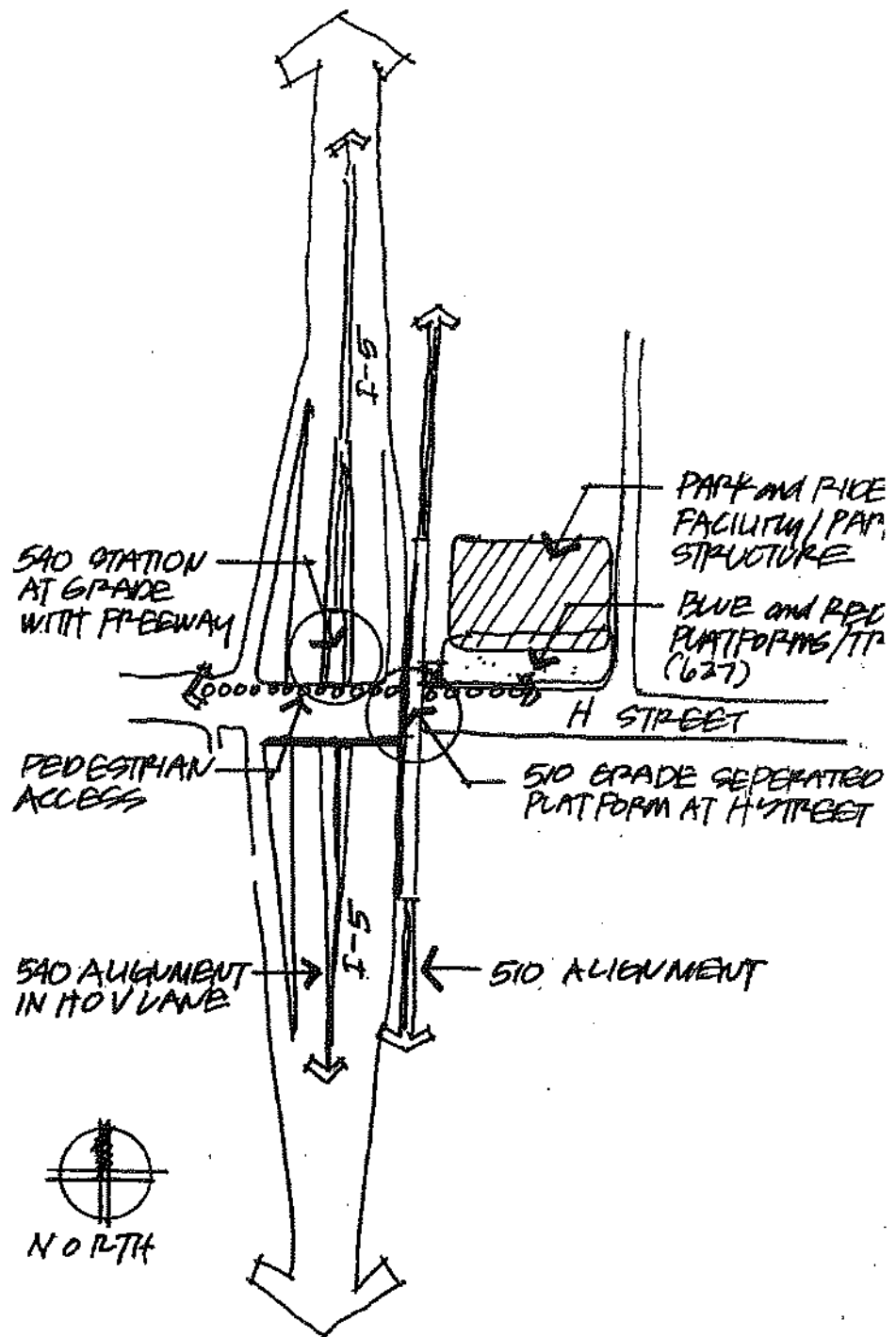


Figure 3.13:  
540 - H Street Station On-Grade Station

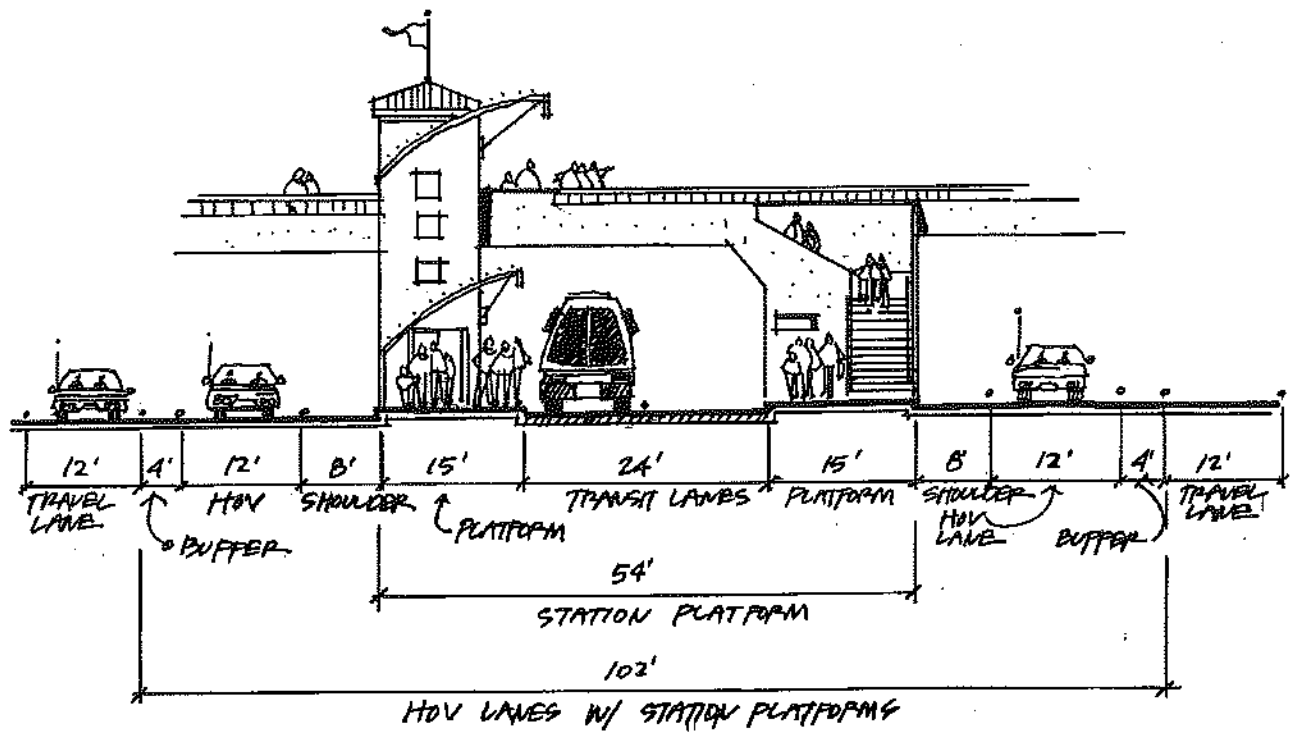


Figure 3.14:  
540 - H Street Station On-Grade Elevation



- **At-Grade with H Street** - Daily passenger loads for the 540 alignment are forecasted at approximately 40,000 in 2020. With 5 minute headways this will require a large number of transit vehicles to cross H Street and impede its traffic flow with an at-grade 540 crossing controlled with transit priority signalization. Street. This type of solution is counter productive for H Street and will not be a reasonable solution.
- **Above-Grade at H Street** - The station will require a 16-foot minimum clearance at H Street and will require significant transition for the transit vehicles to reach the H Street facilities. However, the implementation of 540 station improvements above the grade of H Street appears to solve the problems of the on-grade stations with I-5 and H Street as noted above.

A major structure above the H Street Bridge over I-5 is envisioned. The station will be served by ramps that will provide direct access to and from the I-5 HOV lanes. The station will be comprised of platforms, protected pedestrian access to the Blue Car platforms, and parking immediately east of the existing 510 platforms at the H Street station.

This alternative (Figures 3.15 through 3.17) for the above-grade station at H Street is consistent with the elevation of the 510 above H Street to eliminate the existing grade crossing, as described in *Chapter 2*. The above-grade station platforms for the 510 will tie directly into the 540 station platforms providing for one integrated platform area. While serving both alignments, the platforms will also provide a safer pedestrian environment for the transit riders and closer proximity to the Blue Car service area and the park and ride lot at H Street. This is considered the most feasible alternative of the three reviewed for this location.

It should also be noted that additional parking will be required at the H Street Station. There are approximately 304 existing parking spaces, which operate over capacity on a typical weekday serving the existing 510 corridor. There are approximately 4000 daily boardings at the existing 510 station. Daily boardings are expected to increase to approximately 5600 boardings in the year 2020 for the 510 and 540 routes combined. Further parking analysis of existing latent demand will be required to determine an adequate amount of parking for this station. Because the 510 is expected to be operating at capacity prior to implementation of the 540, expansion of the parking facilities may need to be timed to coincide with the implementation of the 540 service.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

The existing land use plans (1999) show residential uses surrounding the H Street Station. A commercial corridor comprised of retail establishments is located along H Street to the east of the station. Residential uses, including some garden apartment complexes, predominate the area north and south of H Street and mobile home parks are located on the east side of the 510 tracks. Heavy industrial uses are located west of I-5 as shown in *Figure 3.18*.

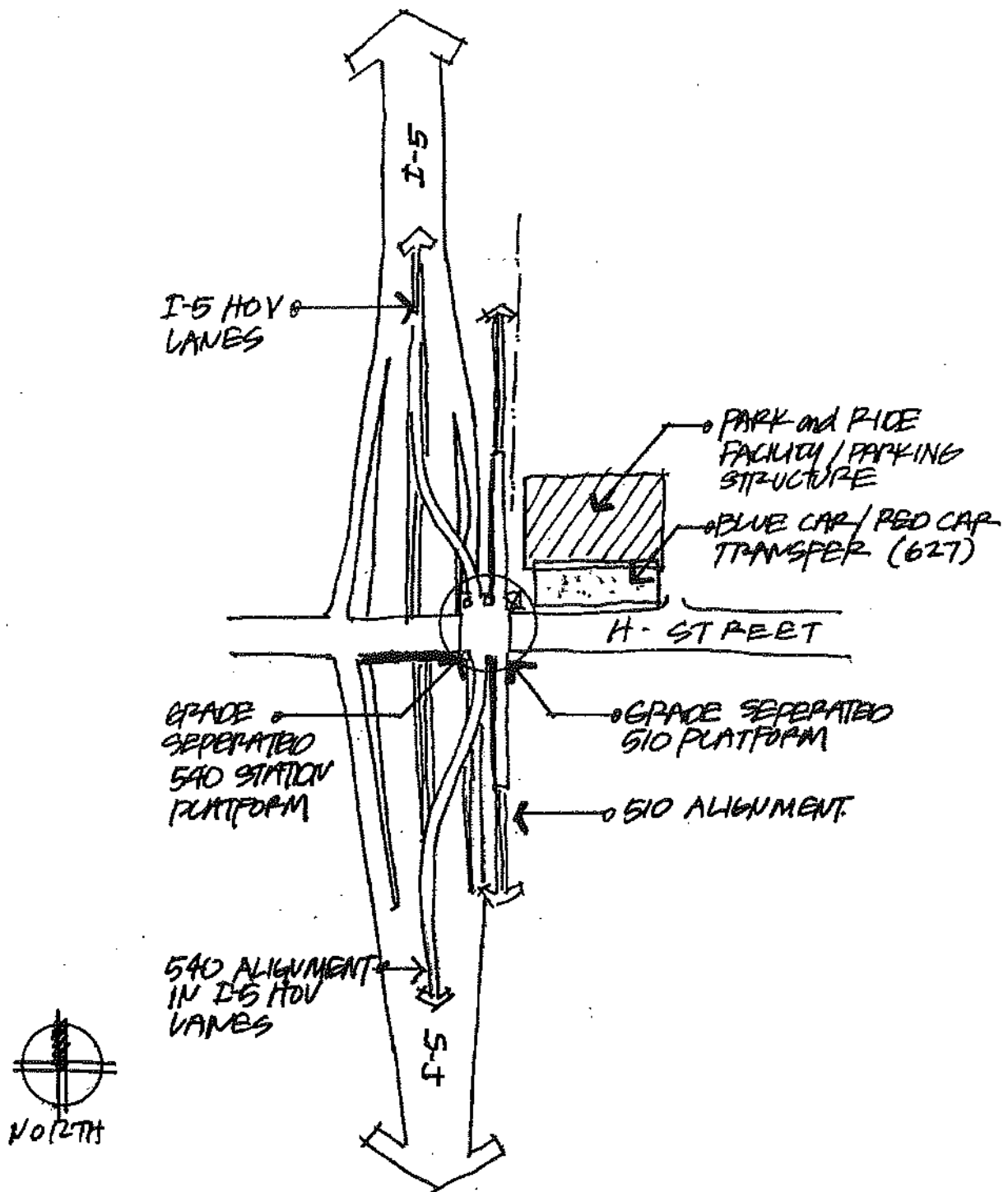


Figure 3.15:  
540 - H Street Above-Grade Station

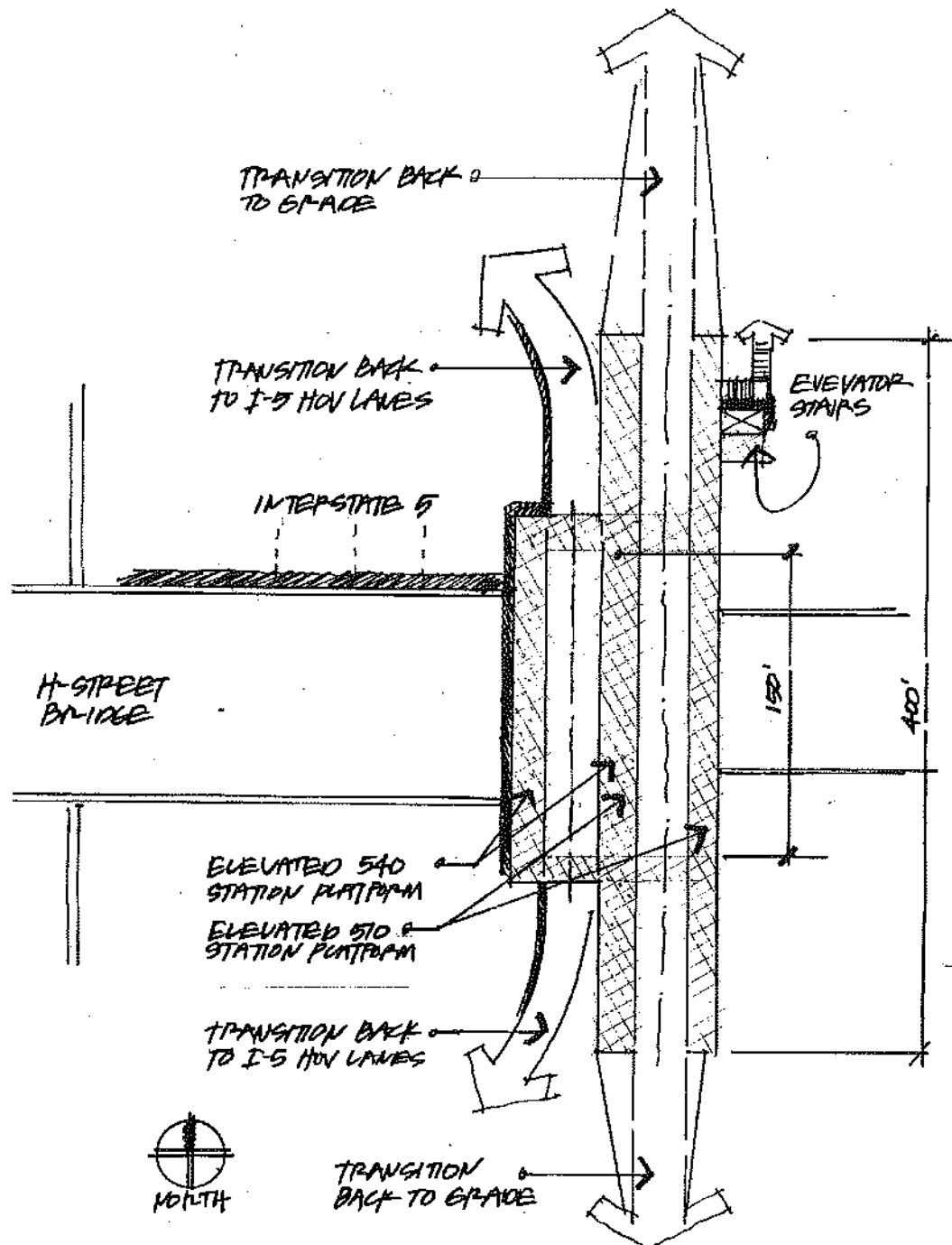
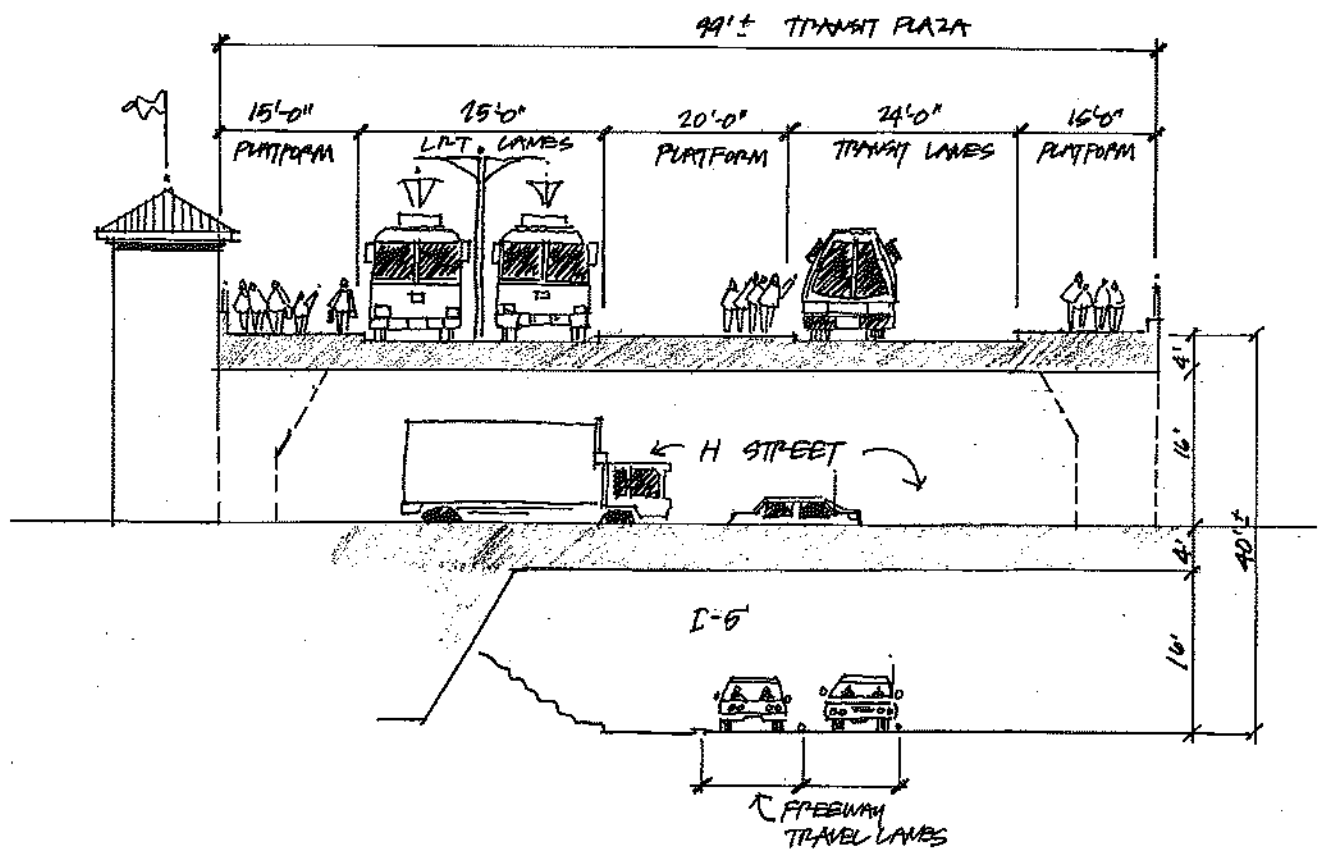


Figure 3.16:  
540 – H Street Station Above-Grade Plan View



**Figure 3.17:**  
**540 – H Street Station Above-Grade Elevation**



**Proposed (2020)**

The 2020 proposed land use within a ¼ mile radius of the station are similar to the existing land use plan. The main difference is the placement of office uses along the eastern edge of I-5 and the replacement of heavy industrial uses with industrial park uses on the west side of I-5 as shown in **Figure 3.18**.

**Opportunities**

It is recommended that mixed-use development opportunities occur closer to the proposed 540 station as shown in **Figure 3.18**. Mixed-use development could occur south of H Street on the east side of I-5. Another opportunity for land use intensification could be the creation of office type uses on the west side of I-5 both north and south of H Street.

The addition of mixed-use and office options will provide for additional transit supportive uses. For these mixed-use opportunities, it is recommended that office use be the dominant use near the freeway with commercial and residential being supportive and/or secondary uses. For development options located further from the freeway, residential should be the dominant use with commercial and office being secondary uses.

▪ **Access**

Access to the 540 station will require significant improvements to ensure that passengers on either side of the interstate can reach the station. If the passenger platforms are to be located within the median area of I-5, vertical connections to reach the transit platforms will be required. Although the distance from the I-5 median to the Blue Car transfer area is short (approximately 150 feet horizontally and 25 feet vertically) there are numerous pedestrian conflicts. These conflicts include the crossings at the I-5 on/off-ramps and the existing rail lines that serve the 510 alignment.

Providing an elevated station in close proximity to the proposed 510 elevated station platform will provide the best pedestrian connectivity. This places the 540 station platforms closer to the proposed parking structure and to the Blue Car transfer location.

In general the area is extremely congested, especially during peak traffic periods due to the numerous turn movements, high traffic volumes and narrow sidewalks in the area. Special care should be given to the pedestrian design to encourage pedestrian movement from the perimeter to the 540 station. Much of this access issue will be resolved if the 540 and 510 are to share elevated platforms above H Street.

The sidewalks on existing streets to accessing these stations will benefit from a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets as shown in **Figure 3.19**:

- H Street and H Street Overpass at I-5
- Woodlawn Avenue

- Oaklawn Avenue
- Jefferson Avenue
- Bay Boulevard

▪ **H Street Station Issues**

For the proposed H Street Station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- The design and construction of the station represents a significant engineering challenge. The preferred alternative is for the entire station will be elevated. The station will be approached on I-5 HOV from both directions. Ramps dedicated exclusively to 540 vehicles will transition up from the grade of I-5 to the grade of the 510, which is planned for elevation approximately 20 feet above H Street. The 540 station will be constructed next to the 510 station for simplicity and to accommodate transfers.
- The 540 station will consist of approach roads, bus bays, and passenger loading platforms. The 510 station, Blue Car platforms, and a parking structure will be situated immediately to the east of the 540 station. Blue Car platforms will be at grade.
- If the preferred alternative is not implemented and the 540 station is constructed at the grade of I-5, substantial pedestrian engineering will be required to permit easy access between the components of the H Street station. Additionally, unusually complex traffic control conditions are currently being experienced in this area due to convergence of traffic flow from the 510 alignment, H Street, and the I-5 on/off ramps. Increased traffic conflicts may occur with additional Red Car service, Yellow Car service, and existing Blue car services entering/exiting the I-5/H Street area along with additional patronage arriving on foot and by car.
- Traffic impacts associated with patron access to the station may be a substantial on adjacent streets. Increased levels of parking and traffic created by those vehicles as they access and depart from the station will require further traffic impact analysis.
- Provision of additional parking is envisioned in structures which will require coordination with the engineering of other improvements at the station. A more detailed parking demand analysis will be necessary to determine the number of additional parking spaces needed at the stations.
- There are not firm plans for the I-5 HOV lanes. Their design and construction should be coordinated with design and construction of the 540 station to minimize traffic disruptions and costs. *Chapter 2* suggests the elevation of the 510 tracks above the grade of H Street to remove the grade crossing, as well as the need for a parking structure at the station. Design and construction of these facilities should be coordinated with design and needs for the 540 station.

**Environmental Issues**

- Elevation of the 540 station above the grade of H Street will have potential visual impacts on the H Street corridor. The design of the 540 station should be coordinated with the design of the I-5 HOV lanes and the elevation of the 510 tracks in the area to minimize visual and other impacts.
- If the preferred alternative is not implemented and the 540 station is constructed at the grade of I-5, widening the I-5 right-of-way to the west may be the most feasible. Depending upon the extent of the expansion existing structures and land uses may be involved. The impacts right-of-way expansion in this area will require further investigation.
- Transit vehicles on the 540 route may increase noise in the area. The additional transit service will likely attract additional vehicular traffic whose impact on nearby streets and intersections will require further analysis.

**Community Issues**

- Visual impacts of the elevated 540 station and approach lanes are potential impacts that may be a concern to the surrounding community.
- Possible impacts of additional station related vehicular traffic may be a concern to the local or nearby community.



EXISTING LAND USE



2020 PLANNED LAND USE

## Mixed Use Opportunities

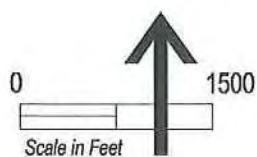
- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES

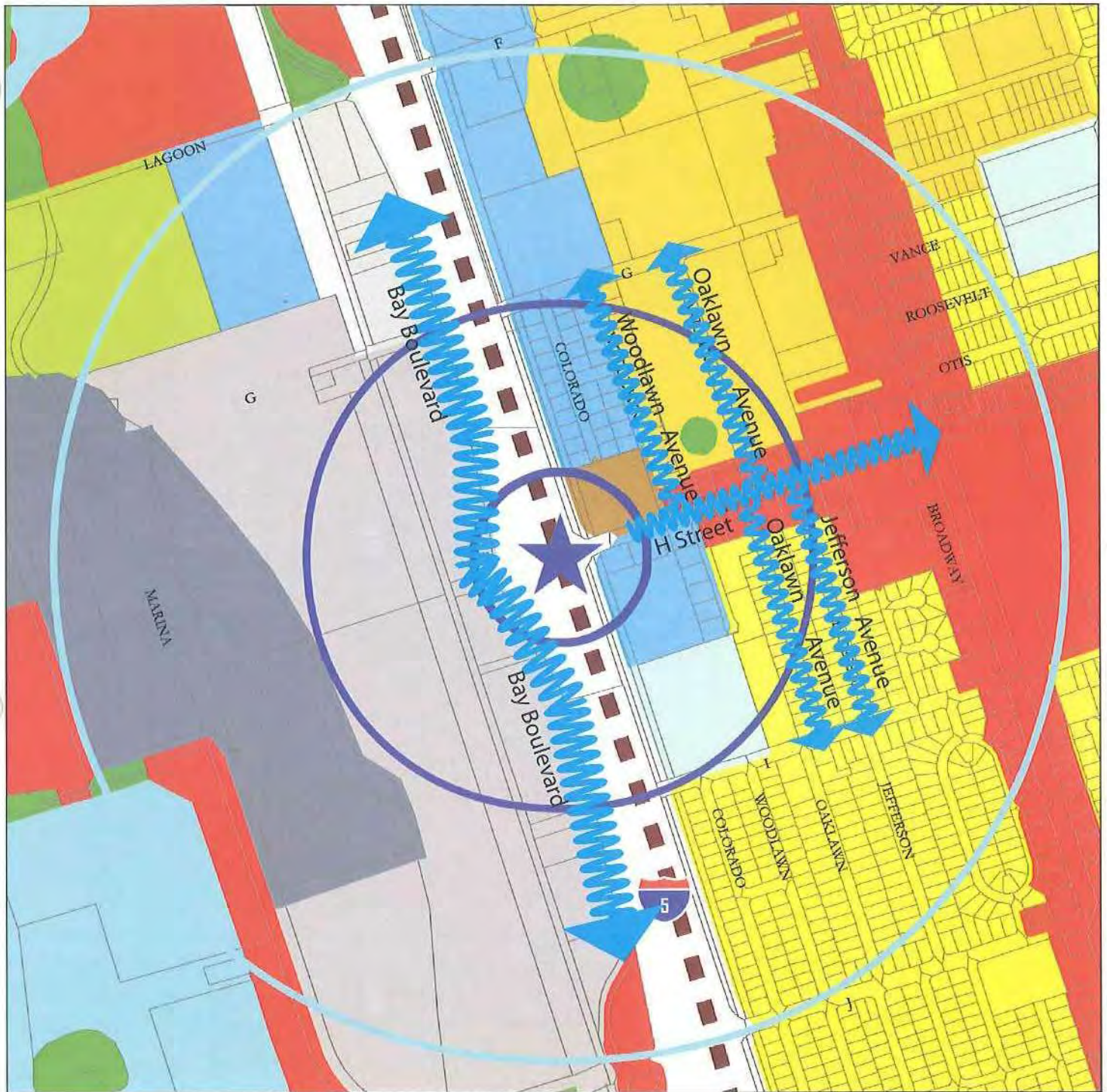


## LAND USE LEGEND

|   |                           |  |                               |  |                               |
|---|---------------------------|--|-------------------------------|--|-------------------------------|
| ⊙ | Car Station               |  | Rail Station/ Transit Centers |  | Vacant / Undeveloped          |
| — | Car Service               |  | Freeways / Roads              |  | Water Bodies                  |
| ⬢ | 1/4 Mile Buffer           |  | Communications / Utilities    |  | Open Space Reserves/Preserves |
| ⬢ | 1/2 Mile Buffer           |  | Retail and Strip Commercial   |  |                               |
| ■ | Single Family Residential |  | Office Lo-Rise                |  |                               |
| ■ | Multi Family Residential  |  | Religious Facilities          |  |                               |
| ■ | Mobile Home Parks         |  | Elementary Schools            |  |                               |
| ■ | Hotel/Motel               |  | Marinas                       |  |                               |
| ■ | Heavy Industry            |  | Other Recreation              |  |                               |
| ■ | Industrial Parks          |  | Parks                         |  |                               |

**Figure 3.18**  
**540 Alignment**  
**H Street Station**





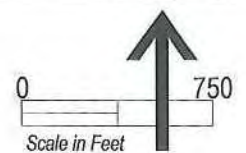
Station Location



540 Alignment



Pedestrian Access to Station



**Figure 3.19**  
**540 Alignment**  
**H Street Station**

### C. Iris Avenue Station

The area surrounding and comprising the Iris Avenue Station will undergo major improvements to accommodate the 540 alignment. The Iris Avenue station is currently a park and ride facility. The station is also a significant transfer hub for Blue Car services including the 29, 901, 905, 932, 933, and 934 routes. The Blue Car service station platforms are located off-street adjacent to the 510 station platform. Approximately 134 daily parking spaces are provided at the station site. The parking lot operates at about 50 percent of capacity on a typical weekday peak commuter period. Additionally, the 625 Red Car service will be using this station as part of its route in the study area.

#### ▪ Right-of-Way Requirements

Relocation of the existing Iris Avenue station south of Iris Avenue will be required to accommodate transfers between the 540, 510, and Blue Car services. The new location of the station is dependent upon the selection of an alternative alignment for the 540 from the Iris Avenue station to San Ysidro. The following are three alternative station locations that were reviewed:

- **Alternative A and B (Figure 3.20 and Figure 3.21)** – Based on the Alignment Alternatives A and B (parallel to the 510 tracks and on Beyer Boulevard in mixed traffic, respectively), the 540 station will be located at the grade of the 510 immediately south of SR-905. The 510 platforms and Blue Car service will be relocated south of SR-905. The 510 platforms will be located along the existing tracks and the Blue Car platforms will be located east of the tracks on parcels located south of SR-905 and north of Dairy Mart Road. These parcels appear to be occupied by a number of small businesses.

The proposed interchange in this area will provide a transition from the SR-905 exclusive transit lanes to an at-grade facility that will be located along Beyer Boulevard to the south of SR-905. This new interchange will likely require additional land and may impinge on the Howard Lane Park located south of SR-905 and immediately west of the 510 tracks. Land approximately 30 feet in width is available between the existing 510 tracks and the park, so park land required should be very minor.

- **Alternative C (SR-905 and I-805)** - The 540 station will be located above the 510 underpass at the SR-905 grade. The 510 station platforms will be relocated south of Iris Avenue under the SR-905 overpass. Blue Car platforms will also be relocated south of Iris Avenue to a parcel currently occupied by a meat distributor. Parking will remain north of Iris Avenue at its current location (**Figure 3.22**).

While relocation of the Iris Avenue station south of SR-905 serves the 510, 540, and Blue Car services, it may impose difficulties for other services planned to operate through the area. The 625 is planned to operate along SR-905 with a station at Iris Avenue followed by a station at the Palm Avenue 510 station. Relocation of the Iris Avenue station south of SR-905 will require a minor deviation by the 625. Under Alternative C, the 625 could operate on the same alignment as the 540 between the Palm Avenue and Iris Avenue stations.

Given the three alternatives reviewed Alternative C resolves the most issues and provides a consolidated station serving all of the major alignments.

Park and ride facilities could be provided both north and south of SR-905 under all alternatives. Pedestrian access between platforms, parking and other facilities north of SR-905 will be provided. The height of the SR-905 embankment and the narrow width of the 510 underpass beneath SR-905 represent design constraints for all the alternatives.

Additional parking may be required at the station. Currently there are approximately 134 parking spaces, which operate at approximately 40 percent of capacity on a typical week day. There are approximately 3,350 daily boardings at the existing 510 station. Daily boardings are expected to increase to approximately 7,700 boardings in the year 2020 for the 510 and 540 routes combined.

Parking demand is expected to increase by 130 percent, assuming passengers boarding the train continue to have the same station arrival characteristics. Based on this assumption, the existing parking may suffice. However, new passengers may use their personal vehicles to access the station at a higher rate than current passengers. There could be a potential increase in pedestrian and bicyclist access depending on future nearby transit supportive development. Further investigation regarding access modes will be required to determine the adequate amount of parking for this station. Since the 510 is expected to be operating at its capacity prior to implementation of the 540, any parking facility expansions should be timed to coincide with the implementation of the 540 service.

#### ▪ **Land Use Integration**

##### ***Existing (1999)***

The existing land use plan, see **Figure 3.23**, illustrates predominately residential uses surrounding the station with industrial uses located to the east. A park and school site is also located to the west of the station. Currently, south of SR-905 the land uses are predominately comprised of residential single-family use of moderate density. A freight container storage facility and vacant land surrounded by the SR-905 on-ramp are located in the immediate vicinity of the existing 510 tracks south of SR-905.

##### ***Proposed (2020)***

The 2020 proposed land use within the station's ¼ mile radius will continue to be predominately residential. Intensification of residential uses is proposed northwest of the station. Also a small mixed-used development is illustrated just to the south and east of where the 510 station is identified and shown in **Figure 3.23**.

##### ***Opportunities***

The overall design and function of this station must work in concert with the 510 station and the adjacent Blue Car transfer facilities. The 540 station will still operate as a significant "park and ride" facility. However, intensification of surrounding land uses, particularly residential uses, could strengthen the "walk up" capability of the 540 and also the 510 station.

Providing more mixed-use opportunities than currently shown will provide more transit supportive uses. Mixed-use developments could also occur on the south and southeast side of the 540 station. For these mixed-use opportunities, it is recommended that residential be the dominant use with office and commercial being supportive and/or secondary uses as shown in **Figure 3.23**.

#### ▪ **Access**

At this location pedestrian access will be dependent on the route alignment and final location of the 540 station. If, as recommended, the 540 Iris Street station is located on SR-905 with the 510 station moved below it, pedestrian access needs to be addressed in two ways:

- Direct pedestrian access from the existing "park and ride" and Blue Car transfer facilities at the 510 station to the proposed 540 station will have to be provided. The vertical distance between the 510 and transfer facilities and the 540 station requires elevators, escalators, and stairwells. Sight lines will have to be maintained from the park and ride areas and the pedestrian experience must be convenient, safe and pleasant.
- The second consideration for pedestrian access is to provide station access from the surrounding neighborhoods to the station(s). The surrounding neighborhoods are comprised predominately of residential homes with employment areas located north and south of SR-905. Direct pedestrian access from both the residential neighborhoods and to the employment areas should be improved.

The sidewalks on existing streets provide the primary means to access these stations and it may be beneficial to improve these connections with a comprehensive streetscape enhancement program. This program should be part of the overall station development plans and should include the following streets and illustrated in **Figure 3.24**:

- Beyer Boulevard
- Iris Street
- Dairy Mart Road
- 30<sup>th</sup> Street

#### ▪ **Iris Avenue Station Street Station Issues**

For the proposed Iris Avenue Station the following are possible issues affecting the implementation of station improvements.

##### **Engineering Issues**

- Construction of the 540 Iris Avenue Station, consistent with the preferred alternative, in the median of SR-905 will require construction of a bridge over the 510 with the station facilities immediately east of the bridge. It will require relocation of the 510 station and Blue Car platforms south of Iris Avenue to accommodate transfers. Blue Car platforms will be located just north of the SR-



905 embankment adjacent to the 510 platforms which are to be relocated underneath the SR-905 overpass. Elevators, escalators, and stairs from the 510 platforms below to the 540 platforms above will facilitate transfers.

- The 540 station construction as well as the 510 and Blue Car station relocations represent substantial engineering challenges given the limited land south of Iris Avenue and the width constraints beneath the SR-905 overpass. Retaining walls beneath the overpass as well as on the north side of the SR-905 embankment may be necessary to create sufficient land for Blue Car platforms.
- "Drop-off" facilities will be located north of the SR-905 embankment if sufficient land is available. Alternatively or additionally, the drop-off facilities could be located south of the underpass on the east side of the 510 tracks. There are currently some small businesses occupying that land. Park-and-ride facilities will remain north of Iris Avenue with provision for safe crossing of that street.

### ***Environmental Issues***

- Traffic can be expected to increase with the additional transit service at the Iris Avenue station. Provision of additional parking will contribute to traffic increases. The amount of additional parking needed for the station as well as the impacts of additional vehicular traffic on streets and intersections near the site will require additional analysis.
- Relocation of the 510 station as a result of the 540 implementation will cause some displacement of train noise to the south as deceleration braking and horn sounding upon approach to the train station can be expected to increase to the south. A nearby park and school on the south side of SR-905 are sites potentially sensitive to noise impacts.

### ***Community Issues***

- Land acquisition between Iris Avenue and SR-905, as well as south of SR-905 if necessary, will directly impact a number of small businesses in the community.
- Increases in noise to the south of the existing station as well as traffic impacts from increased station patronage represent potential community impacts.

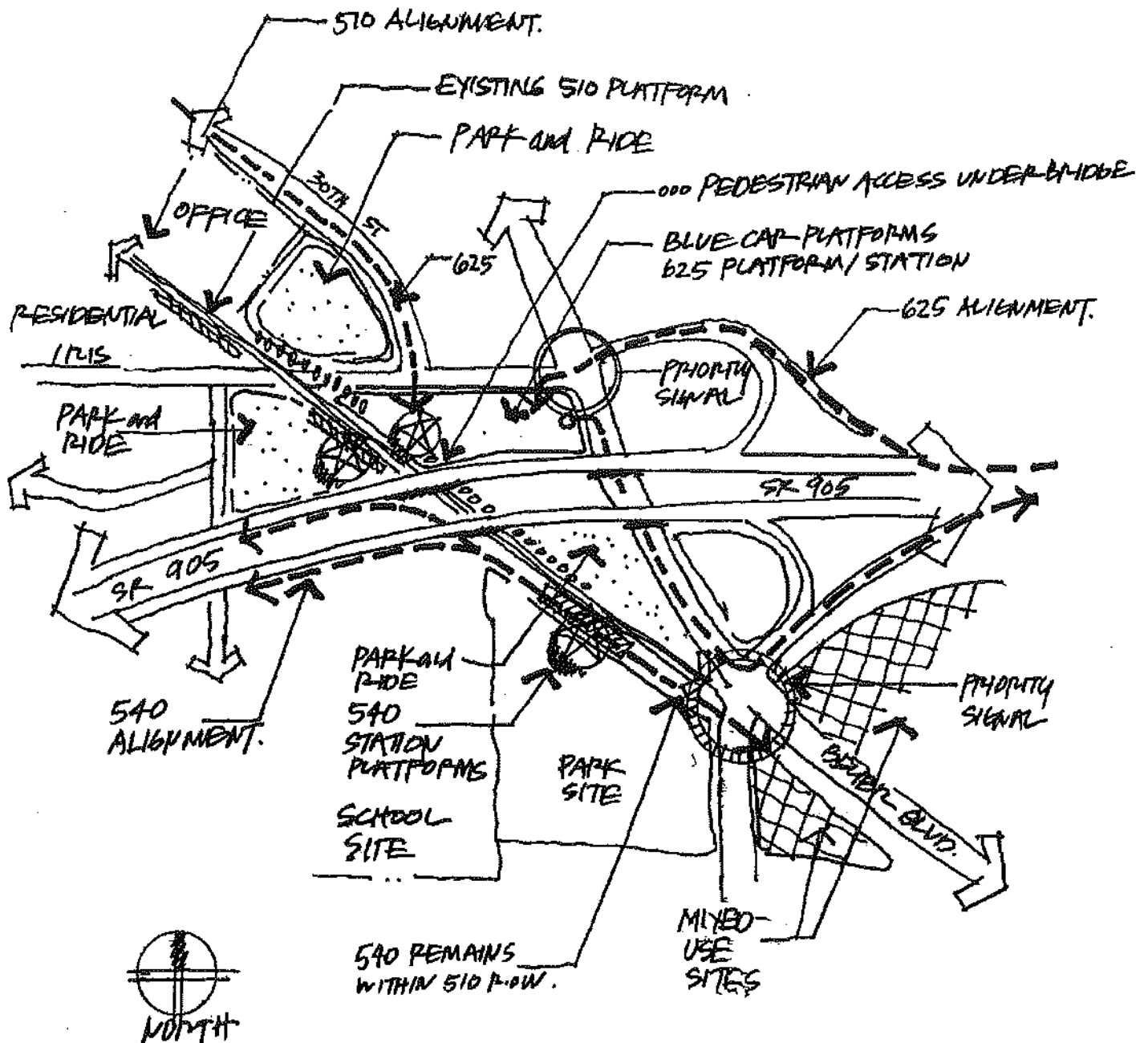


Figure 3.20:  
540 - Iris Avenue Station Alternative "A" Location

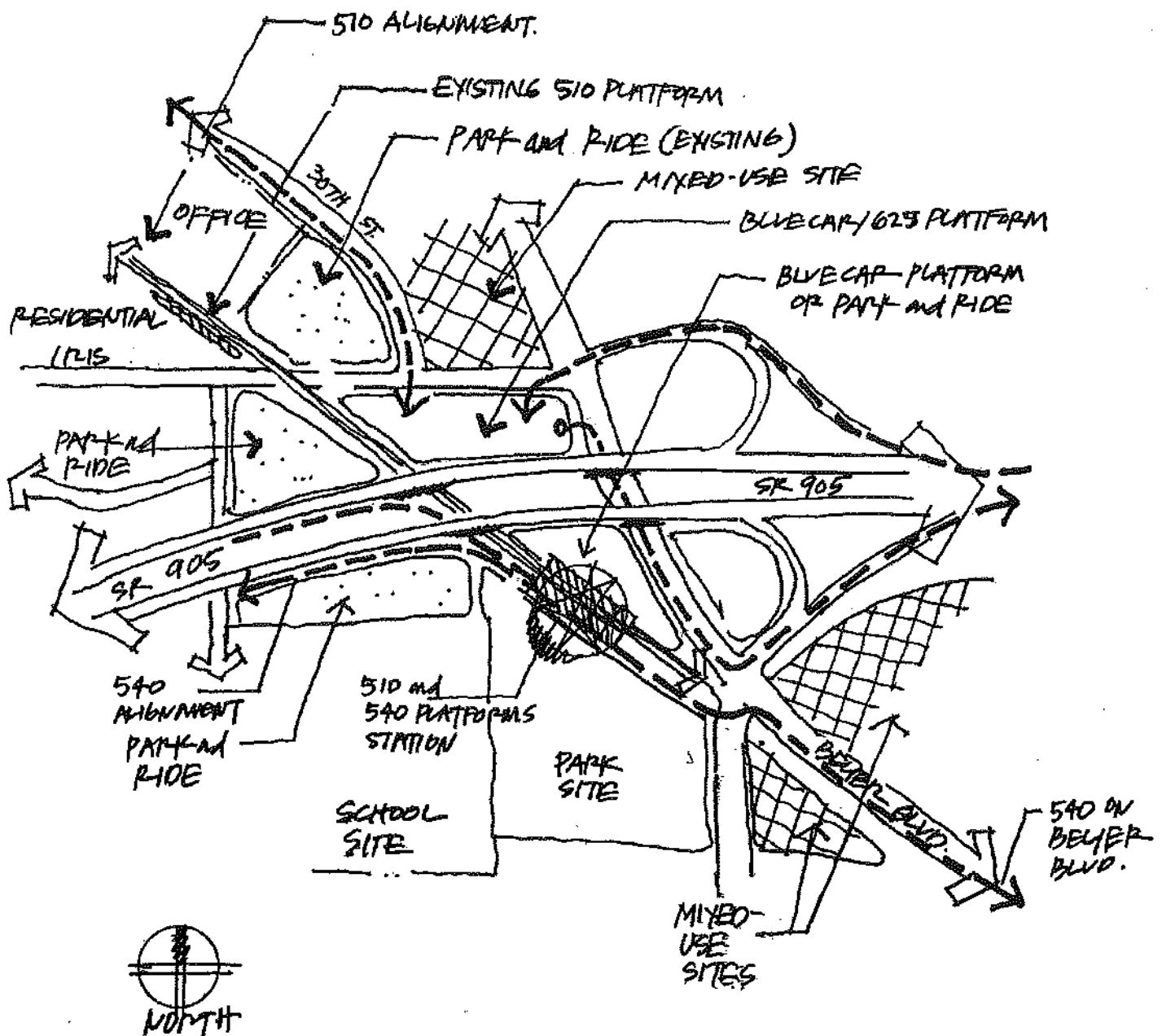


Figure 3.21:  
540 - Iris Avenue Station Alternative "B" Location

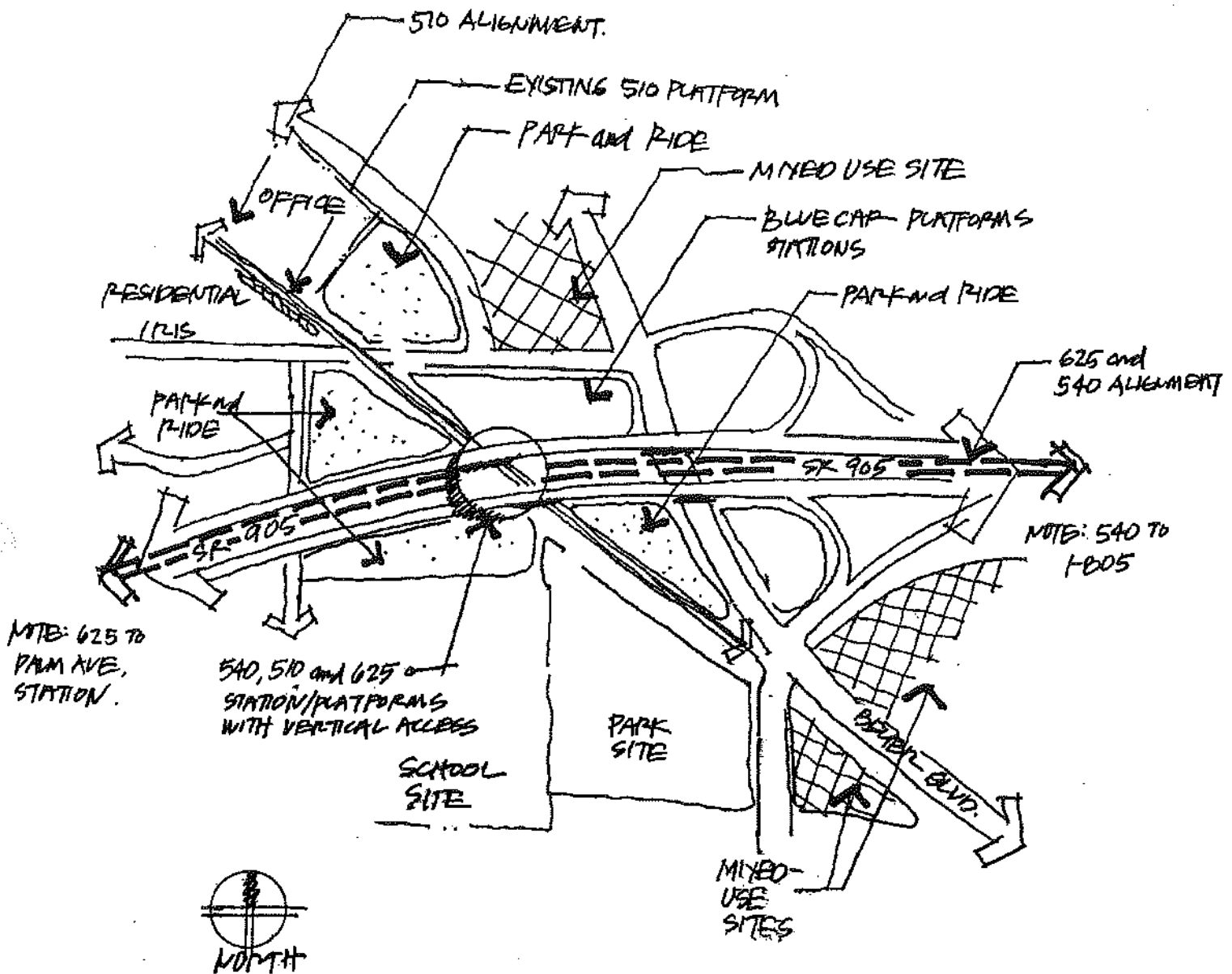


Figure 3.22:  
540 - Iris Avenue Station Alternative "C" Location





EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

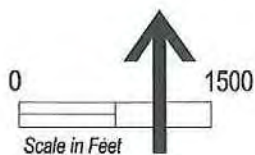
- Residential (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Residential (Primary)
- Office/  
Commercial (Secondary)



OPPORTUNITIES

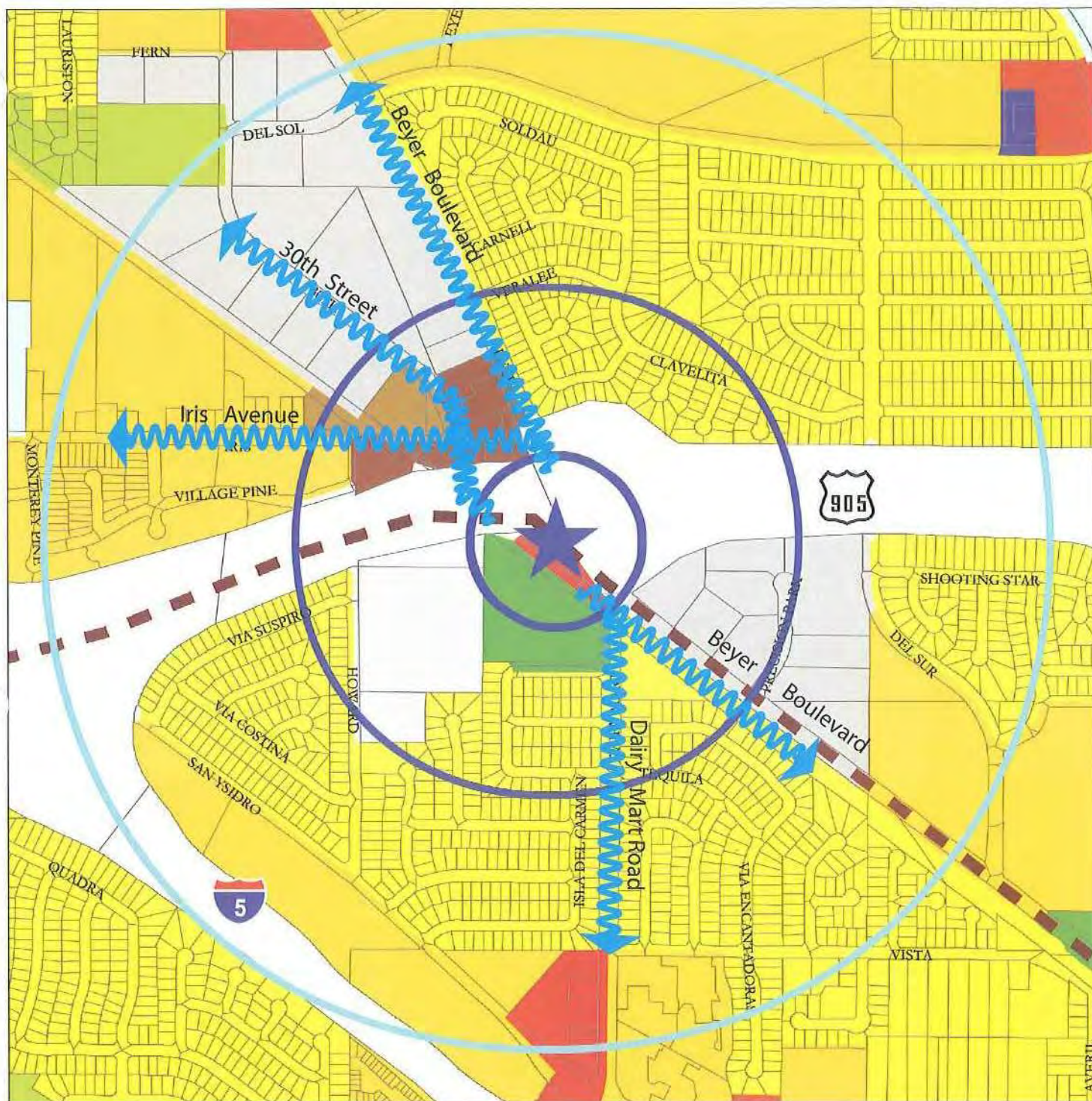


LAND USE LEGEND

- |                              |                                |                               |
|------------------------------|--------------------------------|-------------------------------|
| ⊙ Car Station                | Freeways / Roads               | Parks                         |
| --- Car Service              | Junkyard/Dump/Landfill         | Open Space Reserves/Preserves |
| 1/4 Mile Buffer              | Rail Station / Transit Centers | Vacant / Undeveloped          |
| 1/2 Mile Buffer              | Retail and Strip Commercial    | Mixed Use                     |
| Spaced Rural Residential     | Religious Facilities           |                               |
| Single Family Residential    | Libraries                      |                               |
| Multi Family Residential     | Other Transportation           |                               |
| Mobile Home Parks            | Junior High Schools            |                               |
| Industrial Parks             | Elementary Schools             |                               |
| Warehousing / Public Storage | Schools                        |                               |

**Figure 3.23**  
**540 Alignment**  
**Iris Avenue Trolley Station**



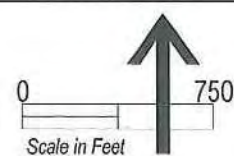


Station Location

540 Alignment



Pedestrian Access to Station



**Figure 3.24**  
**540 Alignment**  
**Iris Avenue Trolley Station**

#### **D. San Ysidro Intermodal Transportation Center Station**

The San Ysidro ITC Station is located at the United States and Mexico border. The station area is primarily pedestrian oriented. The station is heavily patronized by pedestrians crossing the border to access transit services. The station and its surrounding area are currently being reconstructed to better accommodate the large volume of transit patrons. The improvements being made during this reconstruction effort include, increased curve radii approaching the station from the north, wider platforms, surface parking area, and a pedestrian bridge to serve the INS offices.

The station also serves as a transfer hub for the Blue Car 905 and 932 services. Platforms for these Blue Car services are located on-street immediately to the west of the 510 platforms, but will be relocated off-street as part of the current reconstruction. The station is a terminal for the proposed 680 route and for the existing 510 light-rail route.

##### ▪ **Right-of-Way Requirements**

Right-of-way requirements for this station will require further site specific investigation. The area surrounding the border crossing is heavily developed and additional facilities will potentially require intensification of the existing area and/or additional land. The 540 alternatives will approach the border crossing either along East Beyer Boulevard or the adjacent 510 right-of-way.

Additional right-of-way will be required in the station area. One alternative for the right-of-way is the terrace area currently devoted to parking. The terrace area is located behind the buildings that line the eastern side of San Ysidro Boulevard south of the East Beyer Boulevard intersection. This terrace area could be used for transit platforms and as an access area to the border crossing, with a station located up the hill from the existing 510 station as shown in **Figure 3.25**. This will require major changes in the parking, vehicular circulation, and pedestrian amenities in the border crossing area, which are currently being reconstructed. More invasive options could require acquisition of the buildings fronting San Ysidro Boulevard to provide for a station more integrated with the 510 station that is currently under reconstruction.

It should be noted that besides the 540 alignment, additional service by the 680 are also envisioned. These lines will approach the San Ysidro ITC station along I-805. With proper engineering these routes could use the same facilities as the 540 from the point where the 540 leaves I-805.

The San Ysidro ITC Station will require significant attention due to the number of alignments terminating at San Ysidro, the congestion, and the area's associated constraints. The entire area needs to be looked at to determine the possibility of eliminating existing uses. The elimination of existing uses are needed in order to accommodate a cohesive design that will serve the transit stations, government facilities, and the commercial border uses as a whole.

## ▪ **Land Use Integration**

### **Existing (1999)**

Commercial, railroad, highway, transit, and government facilities crowd the existing 510 station. The area is heavily devoted to the movement of people and goods across the border. SANDAG's existing land use plan illustrates the area uses as public services, commercial, and industrial uses as shown in **Figure 3.26**.

### **Proposed (2020)**

The 2020 proposed land use within the station's ¼ mile radius will consist of an increase in commercial uses, open space and transportation uses as shown in **Figure 3.26**. The transportation uses will follow the existing rail freight line. A small residential component is proposed approximately ½ mile northeast of the station.

### **Opportunities**

No significant land use changes are proposed for the San Ysidro station. However, the entire area needs to be redesigned to serve the proposed multiple alignments and to bring "order" to the current chaotic and disorganized area.

## ▪ **Access**

Access to the San Ysidro ITC station will be primarily pedestrian oriented. The station will be heavily patronized by pedestrian and bicycle traffic crossing the border to access transit services. Based on the sheer volume of pedestrian traffic, improved pedestrian access should be a priority and should provide a clear direct access to all of the transit uses as illustrated in **Figure 3.27**.

## ▪ **San Ysidro Intermodal Transportation Center Station Issues**

For the proposed San Ysidro ITC Station the following are possible issues affecting the implementation of station improvements.

### **Engineering Issues**

- Construction of a 540 station in the area of the San Ysidro ITC presents several engineering challenges. Identification of a site for the station will need to consider a number of factors. Expanding the existing intermodal transportation center to accommodate the 540 and other new transportation services will require a substantial increase in available land in the vicinity of the existing 510 station. Land acquisitions and displacement of existing uses are likely to result.
- The 540 station will require the capability to turn transit vehicles around as well as afford easy pedestrian access to the border crossing. Minimizing pedestrian conflicts in an area with very high pedestrian traffic volumes will require substantial engineering. Station design and location will also need to consider border security and other related INS requirements.



***Environmental Issues***

Displacement of existing land uses, including some businesses and parking, are potentially major environmental impacts of development of a 540 station and the access road serving it in the border crossing area. Impacts on other vehicular traffic as well as pedestrian traffic and safety are additional impacts requiring further traffic and circulation and analysis

***Community Issues***

Land use changes, parking reduction, and business takings are impacts to the community likely to occur during the development of a 540 station in the border crossing area.

Pedestrian safety as well as continued access to commercial sites is potential community impacts requiring further investigation during the process of planning and designing a 540 station.

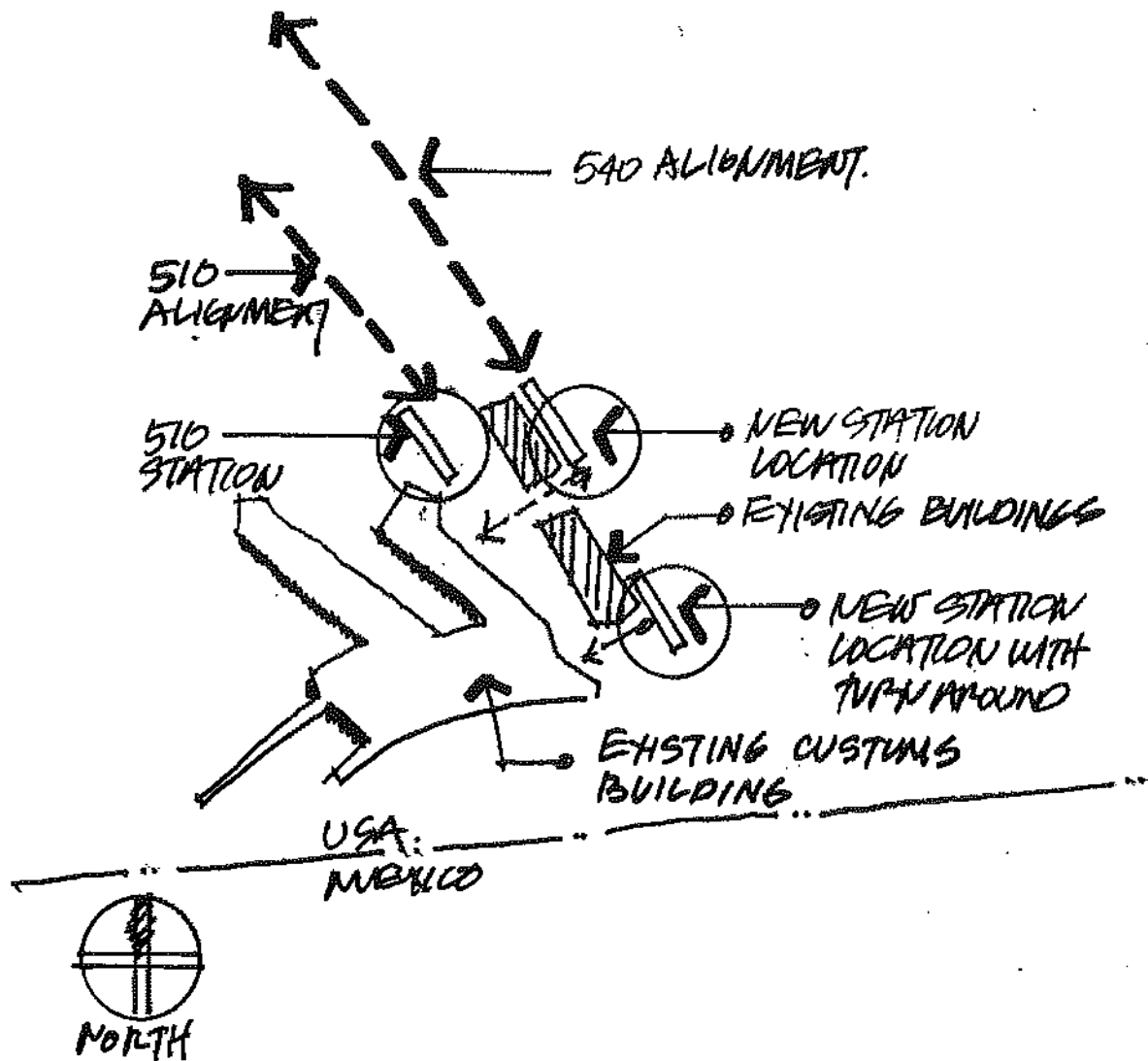


Figure 3.25:  
540 – San Ysidro Station Location



EXISTING LAND USE

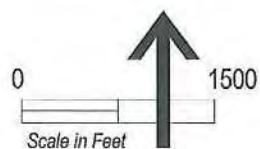


2020 PLANNED LAND USE

NOTE:  
No Opportunities Proposed At This Time



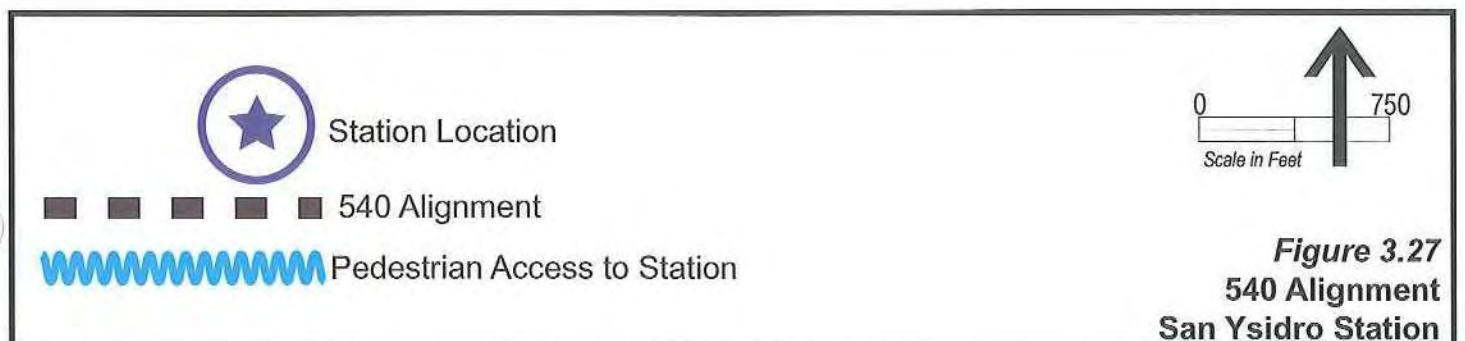
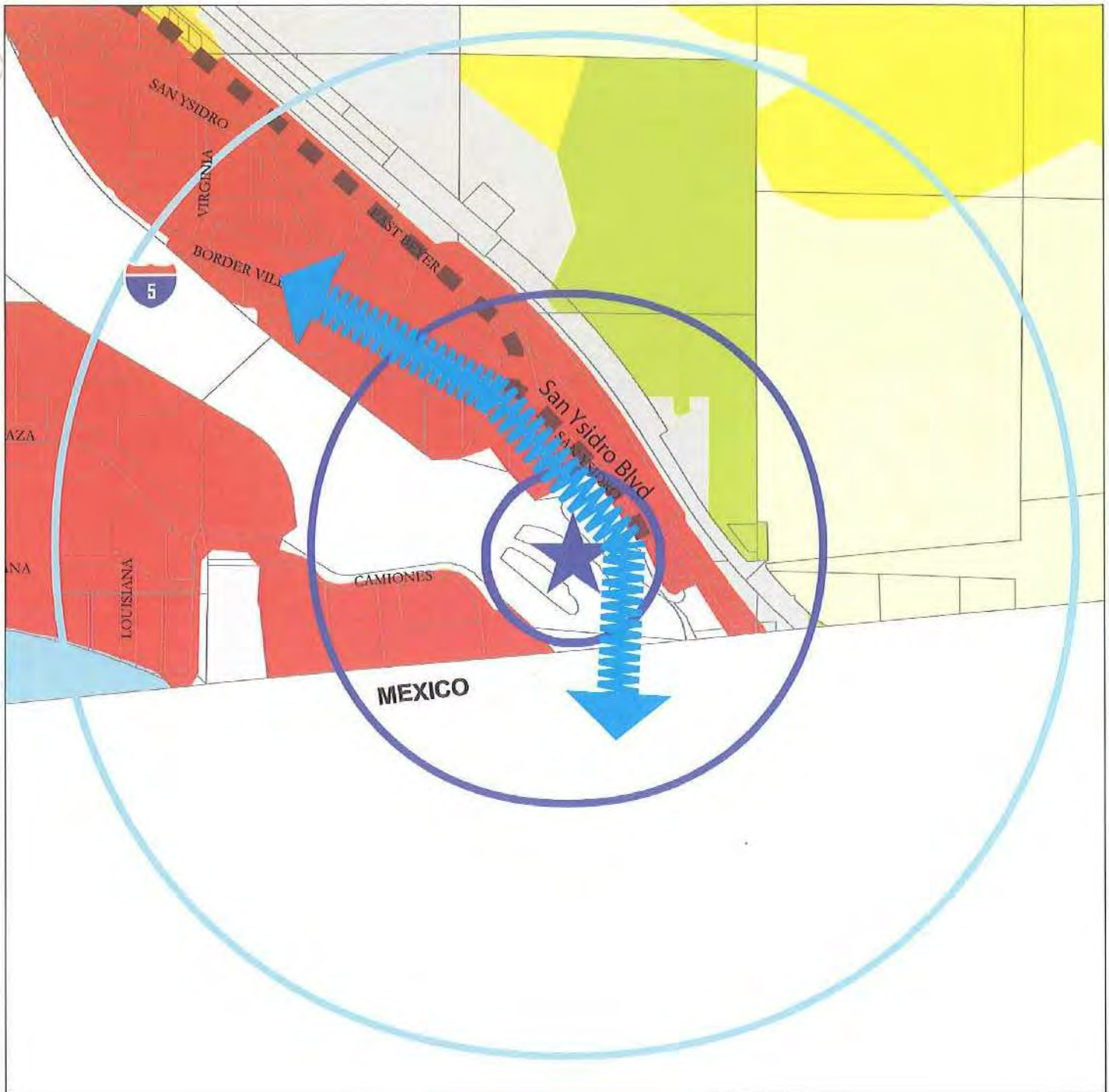
OPPORTUNITIES



### LAND USE LEGEND

- |                              |                               |
|------------------------------|-------------------------------|
| Car Station                  | Other Transportation          |
| Car Service                  | Retail and Strip Commercial   |
| 1/4 Mile Buffer              | Office Lo-Rise                |
| 1/2 Mile Buffer              | Gov't Office / Civic Centers  |
| Single Family Residential    | Other Public Services         |
| Multi Family Residential     | Elementary Schools            |
| Hotel/Motel                  | Other Recreation              |
| Industrial Parks             | Vacant / Undeveloped          |
| Warehousing / Public Storage | Open Space Reserves/Preserves |
| Freeways / Roads             | Water Bodies                  |

**Figure 3.26**  
**540 Alignment**  
**San Ysidro Station**





## Chapter 4 - 625 Alignment

### 4.1 SUMMARY OVERVIEW AND CONCLUSIONS.

The following section provides an overview of the general route alignment, station types, and priority treatments for the Red Car 625 alignment. Additional project analysis and more details information pertaining to the alignment designs are provided in the sections following this summary.

#### A. 625 Alignment– Imperial Beach to Otay Mesa Border Crossing

The 625 alignment will begin at Seacoast Drive and Evergreen Avenue near the Imperial Beach pier. The alignment will travel from the station east on Evergreen Avenue and will turn north on Third Street and turn right at Palm Avenue. The alignment will continue east on Palm Avenue past I-5 to Beyer Boulevard. At Beyer Boulevard the alignment will turn right and head south towards SR-905. At SR-905 the alignment will continue east and will transition onto Otay Mesa Road. The alignment will continue east on Otay Mesa Road it will then turn south and reconnect to SR-905 and will continue traveling south to its terminus at the Otay Mesa border crossing as shown in **Figure 4.1**. The approximate length of the alignment is 13-miles.

In the "Long Term" scenario, the need for operation in mixed flow traffic on Beyer Boulevard may be eliminated with use of the I-5 HOV lanes that will be in operation from south of Palm Avenue to SR-905. This elimination will require a slight route deviation to provide service to the Palm Avenue 510 station. However, the time savings of high speed operation on I-5 may justify such a deviation. The use of the I-5 HOV lanes will depend upon the implementation of the 540 station facilities at the Iris Avenue station which will also be used by the 625.

#### B. Alignment Station Types

Based on the field research and project analysis ten (10) stations have been identified for the 625 alignment and are illustrated in **Figure 4.1**. The type of transit station associated with each location is summarized in **Table 4.1**. Future discussion for each station is provided in *Section 4.3: Station Location and Types*.

#### C. Priority Treatment Conclusions

The priority treatments recommended for the 625 Alignment are summarized and illustrated in **Figure 4.2**. These recommendations are based primarily on the corridor's traffic congestion, physical constraints, and their feasibility for implementation.





# Alignment and Stations

MTDB - South Bay Transit  
First Project

**ROUTE 625- Imperial Beach to Otay  
Mesa Border Crossing via Palm Avenue  
and Otay Mesa Road**

## LEGEND

- Alignment
- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

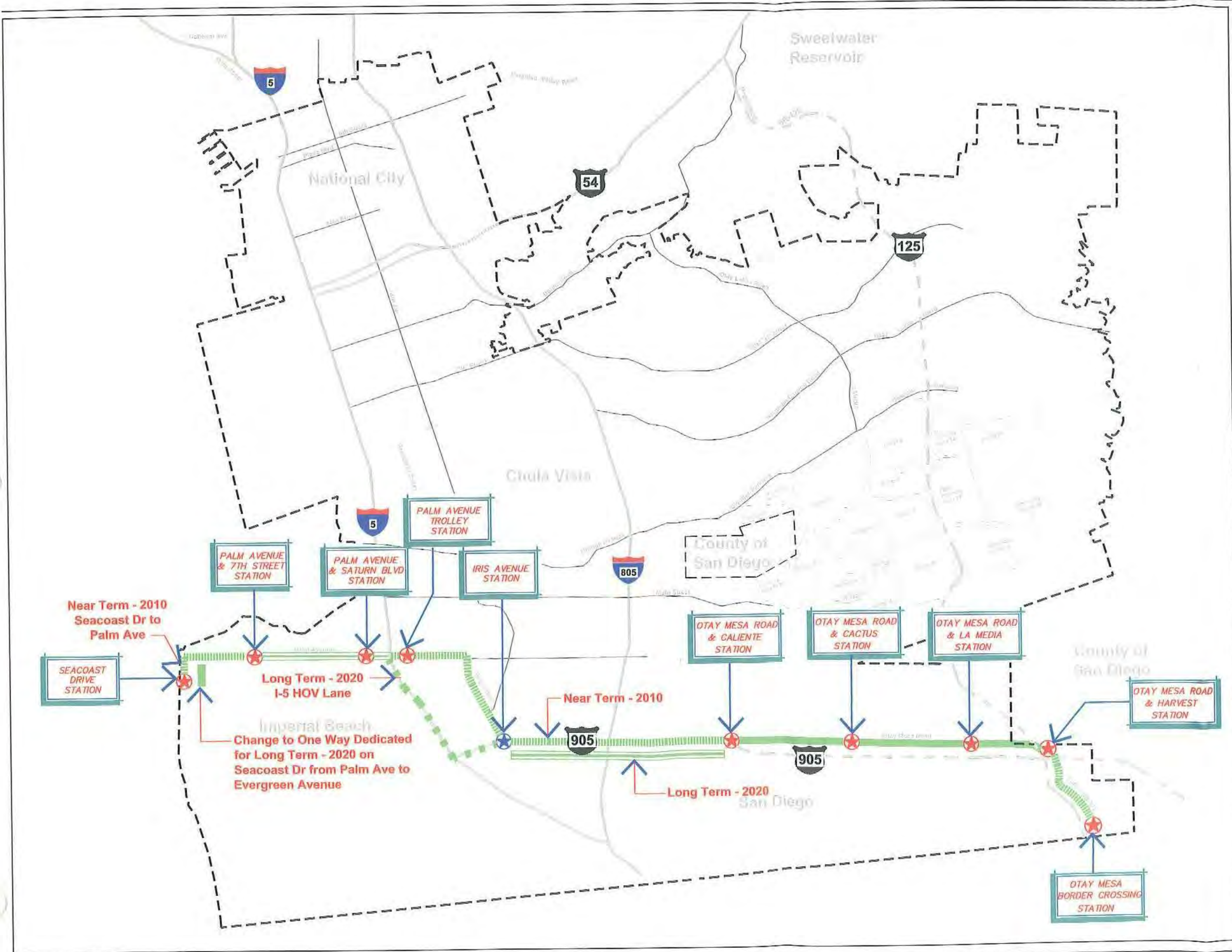
0 1/2 1 mile



**Wilbur Smith Associates**  
9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 4.1**  
**ALIGNMENT AND STATIONS MAP**  
**625 ALIGNMENT**





## Transit Priority Treatments

MTDB - South Bay Transit  
First Project

**ROUTE 625- Imperial Beach to Otay  
Mesa Border Crossing via Palm Avenue  
and Otay Mesa Road**

### LEGEND

- Dedicated Alignment
- Curbside
- Median Running
- Dedicated Alignment
- Mixed Flow Alignment
- Dedicated Alignment
- I-5 HOV Lane
- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

NOTE: Priority Signals will be needed at any signalized intersection along the alignment.

0 1/2 1 mile



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 4.2**  
**PRIORITY TREATMENTS MAP**  
**625 ALIGNMENT**

| Station Types                   |                        |                          |                           |                            |                           |                            |                     |                       |                         |
|---------------------------------|------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------|-------------------------|
| Station Locations               | Freeway Median Station | Off Street / Transit Hub | Curbside Far-side Station | Curbside Near-side Station | Curbside Bulb-out Station | Curbside Mid-Block Station | Median Dual Station | Median Offset Station | Freeway Turnout Station |
| Seacoast Drive at Evergreen Ave |                        |                          |                           | ●                          |                           |                            |                     |                       |                         |
| Palm Avenue and 7th St          |                        |                          | ●                         | ●                          |                           |                            |                     |                       |                         |
| Palm Avenue and Saturn Blvd     |                        |                          |                           |                            |                           |                            | ●                   |                       |                         |
| Palm Avenue                     |                        | ●                        |                           |                            |                           |                            |                     |                       |                         |
| Iris Avenue                     |                        | ●                        |                           |                            |                           |                            |                     |                       |                         |
| Otay Mesa Road at Caliente Ave  |                        |                          | ●                         |                            |                           |                            |                     |                       |                         |
| Otay Mesa Road at Cactus Ave    |                        |                          | ●                         |                            |                           |                            |                     |                       |                         |
| Otay Mesa Road at La Media Ave  |                        |                          | ●                         |                            |                           |                            |                     |                       |                         |
| Otay Mesa Road at Harvest Ave   |                        |                          |                           |                            |                           |                            |                     |                       | ●                       |
| Otay Mesa Border Crossing       |                        | ●                        |                           |                            |                           |                            |                     |                       |                         |

**Table 4.1:**  
**625 Summary Table – Station Location and Types**



## 4.2 625 ALIGNMENT ANALYSIS

This section discusses the 625 alignment and areas of significant traffic congestion that will inhibit the direct routing or reduce the necessary high travel speeds and service reliability for the Transit First route. Also identified in this section are the transit priority measures that could be used to minimize the impacts of these congested areas, maintain service reliability and their feasibility of implementation. Additionally, station locations and their requirements are identified along with land uses and access opportunities assisting and supporting the station.

### A. Traffic Congestion

#### ▪ Near Term (2010)

Traffic levels of service (LOS) on the alignment roadways are projected to vary in operation between LOS A through F and shown in **Table 4.2**. The portions of the alignment on Seacoast Drive and Palm Avenue east to 3<sup>rd</sup> Street are expected to operate at LOS E. The segment of the alignment from Palm Avenue east of 3<sup>rd</sup> Street to 7<sup>th</sup> Street / Silver Strand Boulevard will operate at LOS D. This section of Palm Avenue is a 4-lane roadway with a left turn center lane. Parking is prohibited on both sides of the roadway.

The segment of the alignment that travels from Palm Avenue from 7<sup>th</sup> Street / Silver Strand Boulevard to I-5 is projected to operate between LOS C and LOS F based on daily traffic volumes. The segments closer to I-5 have the heavier congestion levels. This segment of Palm Avenue is very wide and exclusive dedicated transit lanes could be provided if the median and/or existing bike and parking lanes were utilized and the curb-to-curb section was restriped.

According to SANDAG's 2020 Traffic Forecast, the segment of the alignment on Palm Avenue, from Hollister Street near the Trolley Station to Beyer Boulevard, is projected to have relatively low levels of daily traffic. Based on daily traffic volumes, the segment currently operates and is projected to operate at LOS A. This suggests that transit operations on this segment could be provided in mixed-flow lanes or a lane could possibly be dedicated in each direction for transit use only.

Beyer Boulevard is an appropriate selection as a connector between Palm Avenue and SR-905. Based on current and projected daily traffic volumes, Beyer Boulevard will operate at LOS B. The relatively low levels of daily traffic projected for this roadway will suggest that transit operations could be provided in mixed-flow lanes or in dedicated transit only lanes.

By 2010 SR-905 should be completed to the border. SR-905, from Beyer Boulevard to Otay Mesa Road, will be a 6-lane roadway and is projected to operate at LOS C. With this level of traffic volume it is possible to run the transit lanes in mixed-flow traffic and still insure reliable transit service.

The segment of the alignment on Otay Mesa Road from Caliente Avenue to the proposed SR-125 is a 6-lane roadway and is projected to operate at LOS A. This level of traffic volume will allow the use of mixed-flow lanes for transit vehicles or the use of one lane in each direction for dedicated transit lanes.

The segment of the alignment from SR-905 from Otay Mesa Road / SR-125 south to the border is projected to operate at LOS A. The relatively low level of daily traffic will allow for mixed-flow lanes for near term transit operations.

▪ **Long Term (2020)**

Traffic levels of service on the route alignment roadways are projected to vary between LOS A and LOS F in the long term scenario. A summary of both Near Term and Long Term LOS for this corridor is illustrated below in **Table 4.2**.

|                                                                                       | <b>2010<br/>Near Term</b> |          |          |          |          |          | <b>2020<br/>Long Term</b> |          |          |          |          |          |
|---------------------------------------------------------------------------------------|---------------------------|----------|----------|----------|----------|----------|---------------------------|----------|----------|----------|----------|----------|
| <b>Levels Of Service(LOS)</b>                                                         | <b>A</b>                  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> | <b>A</b>                  | <b>B</b> | <b>C</b> | <b>D</b> | <b>E</b> | <b>F</b> |
| <b>Seacoast Drive</b><br>Evergreen to Palm Ave                                        |                           |          |          |          | ●        |          |                           |          |          |          |          | ●        |
| <b>Palm Avenue</b><br>Seacoast Dr. to 3 <sup>rd</sup> St                              |                           |          |          |          | ●        |          |                           |          |          |          | ●        |          |
| <b>Palm Avenue</b><br>3 <sup>rd</sup> St to 7 <sup>th</sup> St/<br>Silver Strand Blvd |                           |          |          | ●        |          |          |                           |          |          | ●        |          |          |
| <b>Palm Avenue</b><br>7 <sup>th</sup> St/Silver Strand Blvd to<br>I-5                 |                           |          | ●        | ●        | ●        | ●        |                           |          | ●        | ●        | ●        | ●        |
| <b>Palm Avenue</b><br>Hollister to Beyer Blvd                                         | ●                         |          |          |          |          |          | ●                         |          |          |          |          |          |
| <b>Beyer Blvd</b><br>Palm Ave to SR-905                                               |                           | ●        |          |          |          |          |                           | ●        |          |          |          |          |
| <b>SR-905</b><br>Beyer Blvd to I-805                                                  |                           |          | ●        |          |          |          |                           |          |          | ●        |          |          |
| <b>SR-905</b><br>I-805 to Otay Mesa Rd at<br>Caliente Ave                             |                           |          | ●        |          |          |          |                           |          | ●        |          |          |          |
| <b>Otay Mesa Road</b><br>Caliente Ave to Proposed<br>SR-125                           | ●                         |          |          |          |          |          | ●                         |          |          |          |          |          |
| <b>Otay Mesa Road</b><br>/Proposed SR-125<br>South to Otay Mesa Border<br>Crossing    | ●                         |          |          |          |          |          | ●                         |          |          |          |          |          |

Levels of Service are ranked from LOS A=Best to LOS F=Worst.

Ranking is derived from San Diego Street Design Manual which cross-references roadway classifications, average daily traffic and levels of service. See Chapter 1, Table 1.1 for ranking criteria.

**Table 4.2:**  
**625 Alignment - Congestion Levels**

Similar to the near term scenario, the portion of the alignment on Seacoast Drive from Evergreen to Palm Avenue and Palm Avenue, from Seacoast to Third, and west of I-5, are expected to operate at unacceptable levels of service (LOS E and F).

Portions of the alignment east of I-5 are projected to operate at service levels of C or better, with the exception of SR-905 between Beyer Boulevard and I-805, which is expected to operate at LOS D.

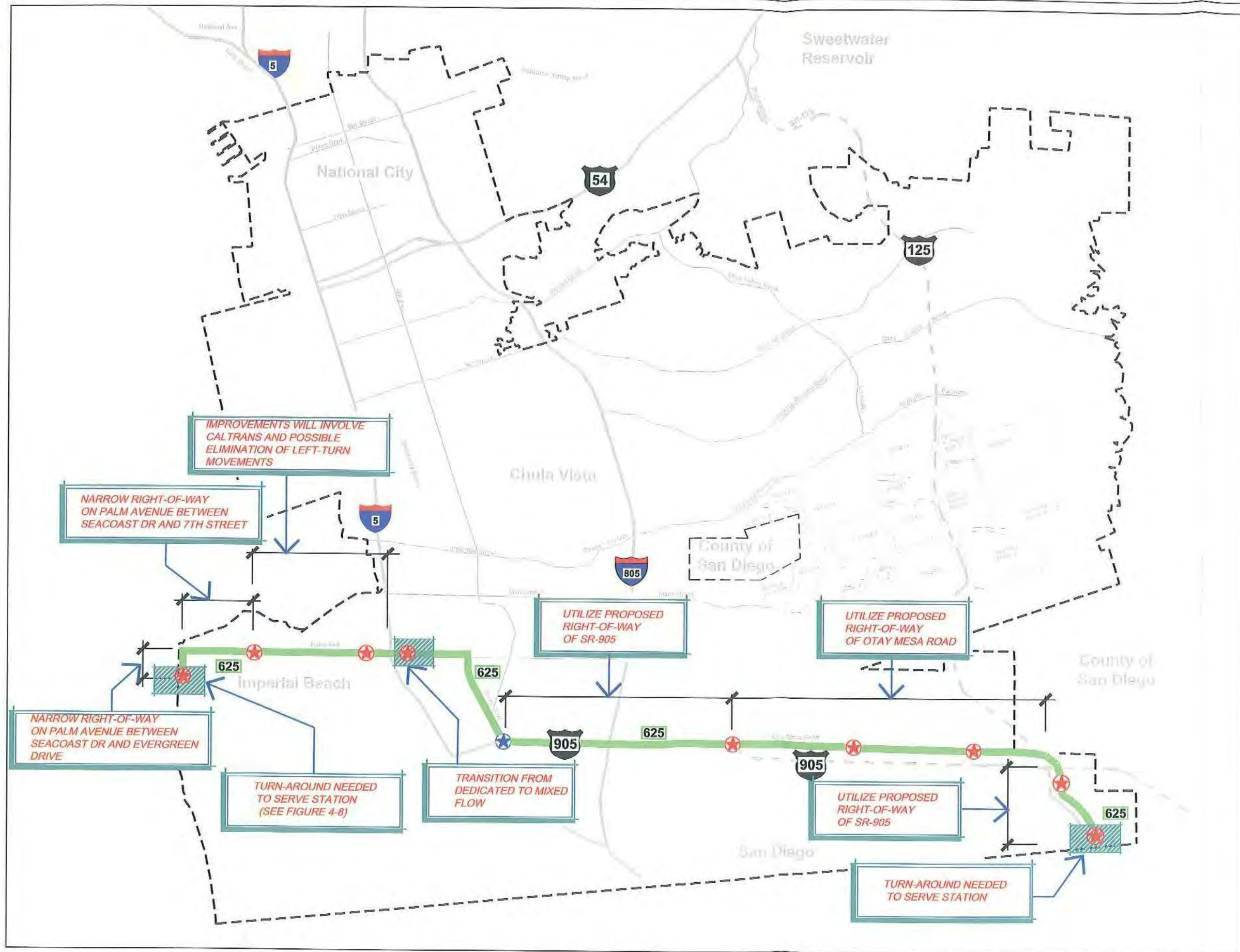
Based on SANDAG's 2020 Traffic Forecast, the segment of the alignment on Otay Mesa Road from Caliente Avenue to the proposed SR-125 is a 6-lane roadway and is projected to continue to operating at LOS A. Again, this will allow the use of mixed-flow lanes for transit vehicles or the use of one lane in each direction for dedicated transit lanes.

The segment of the alignment on SR-905 from Otay Mesa Road / SR-125 south to the border is projected to operate at LOS A in 2020. The relatively low level of daily traffic will allow for mixed-flow lanes for near term transit operations.

## **B. Physical Constraints**

There are numerous physical constraints affecting the type of priority measures that will be need to be implemented along the route. These physical constraints are outlined below and illustrated in **Figure 4.3**:

- The narrow right-of-way on Seacoast Drive will provide a two lane undivided roadway (one travel lane in each direction) with parking allowed on both sides. The roadway is approximately 44-feet wide from curb to curb. The area is considered fully developed making it difficult to expand the existing right-of-way for dedicated transit lanes without significant acquisition.
- This section of the route is six blocks in length. Removal of recreational and commercial supportive on-street parking or acquisition of additional right-of-way will be extremely difficult to achieve.
- The turn-around area at Seacoast Drive and Evergreen Avenue will also have to be addressed. The 625 may have to use the existing residential streets, Evergreen Avenue and Third Street, to resume travel on Palm Avenue as it heads east towards I-5. This route is illustrated in **Figure 4.8**.
- Palm Avenue, between Seacoast Drive and 3<sup>rd</sup> Street is a 64-foot wide curb-to-curb section. There is one travel lane in each direction with parking on both sides and a 14-foot wide median. Additional right-of-way or removal of on-street parking will be necessary to provide for fully dedicated transit lanes. This section of the route is two blocks in length and removal of on-street parking or acquiring additional width for dedicated transit lanes may be extremely difficult.
- Palm Avenue, between 3<sup>rd</sup> Street and 7<sup>th</sup> Street is a 64-foot wide curb-to-curb section. There are two (2) travel lanes in each direction and a 14-foot wide median. Parking is restricted on both sides of the street. Provisions to provide a dedicated transit lane will require removal of travel lanes, or removal of the existing median and a travel lane, or acquisition of additional right-of-way.



# Physical Constraints Map

MTDB - South Bay Transit  
First Project

**ROUTE 625- Imperial Beach to Otay Mesa Border Crossing via Palm Avenue and Otay Mesa Road**

## LEGEND

- Alignment
- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations



**Wilbur Smith Associates**  
9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 4.3**  
**PHYSICAL CONSTRAINTS MAP**  
**625 ALIGNMENT**



- Numerous storefronts line the edge of the right-of-way along Seacoast Drive and Palm Avenue between Evergreen Avenue and I-5. Mixed-flow transit lanes or dedicated transit lanes operating in the outside or curbside lanes will experience operational delays caused by right-turn movements of driveway traffic.
- Improvements or changes to the right-of-way on Palm Avenue (SR-75) will involve Caltrans. Portions of Palm Avenue are also designated as a "Scenic Drive" and changes will be reviewed at the state level.
- Median left turn lanes are currently provided along Palm Avenue from Seacoast Drive to Beyer Boulevard and on Beyer Boulevard from Palm Avenue to SR-905. Dedication of median running travel lanes for the 625 is likely to require elimination of some left turn opportunities and landscape improvements.
- Otay Mesa Road can accommodate fully dedicated transit lanes within the existing lane configuration. Due to the expected traffic volume decrease anticipated upon completion of SR-905, two (2) lanes on Otay Mesa Road may be converted from mixed-flow to dedicated transit lanes. This corridor will also allow the integration of the stations into the surrounding land uses better than if the station were located on SR-905.

### **C. Priority Measures**

The following priority measures are proposed to ensure the avoidance of identified congestion areas in both the near term and long term conditions as show in *Figure 4.2*.

#### ▪ **Near Term (2010)**

Due to congestion levels dedicated transit lanes will typically be recommended on Seacoast Drive from Evergreen Avenue to Palm Avenue and on Palm Avenue from Seacoast Drive to 7<sup>th</sup> Street. However, acquisition of additional land, removal of travel lanes for transit only lanes, and on-street parking removal are extremely problematic. Due to these constraints mixed-flow transit lanes in this area for the near term is recommended.

Traffic signal priority measure will also improve the 625 operations in this portion of the corridor and should be utilized at all signalized intersections.

Either median or curbside running-dedicated transit lanes are feasible on Palm Avenue from 7<sup>th</sup> Street/Silver Strand Boulevard to the I-5 interchange. This will require re-striping of existing lanes, removal of on-street parking and reconfiguration of the existing medians as shown in *Figures 4.4 through 4.6*. Each one has issues associated with implementation and have been outlined in *Section B - Engineering and Environmental Issues*. However, for this portion of the corridor it is recommended that median running transit lanes be provided. Median running transit lanes will minimize the traffic conflicts with the multiple right turn movements in this portion of the corridor providing a more reliable service.

Operation east of I-5 on Palm Avenue and Beyer Boulevard can occur in either mixed-flow or in dedicated lanes. The traffic congestion in this area is not significant and it is recommended that the transit travel in mixed-flow lanes. This segment will require traffic signal priority for the 625 vehicles.

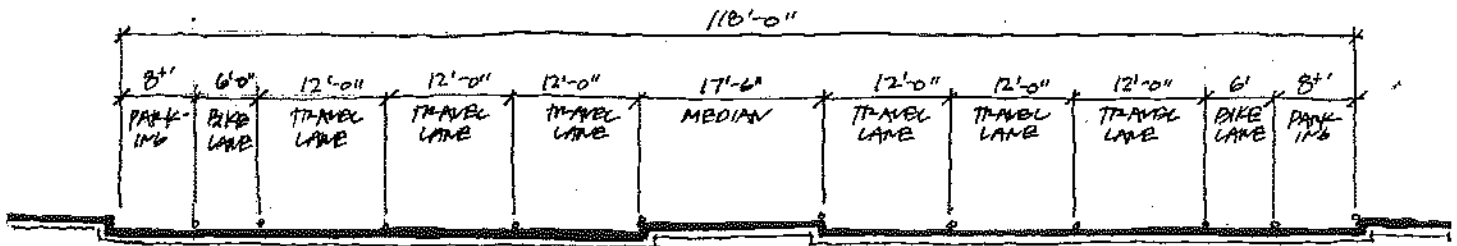


Figure 4.4:  
Palm Avenue Existing Condition

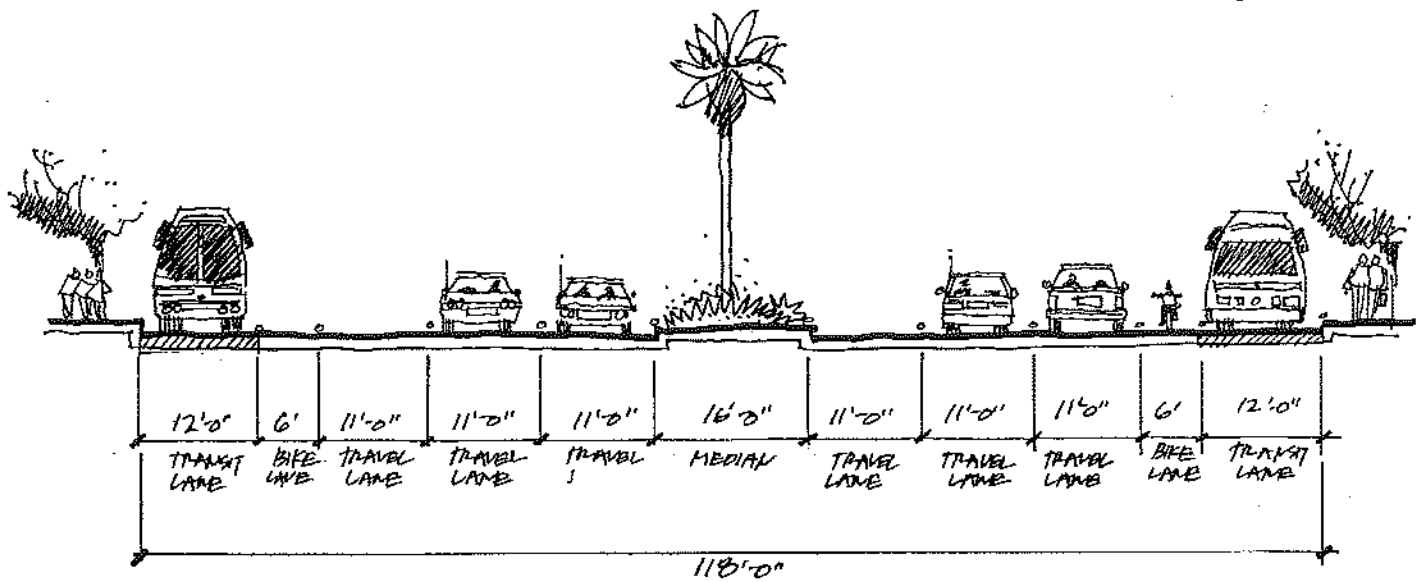


Figure 4.5:  
Palm Avenue Curbside Transit Lanes

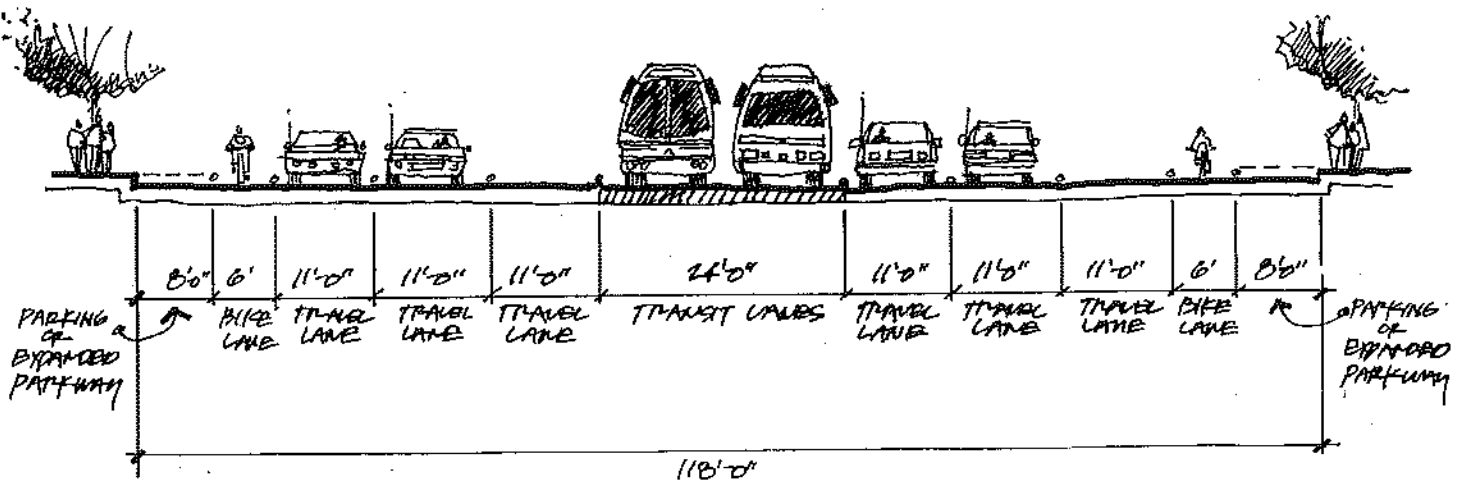


Figure 4.6:  
Palm Avenue Median Transit Lanes

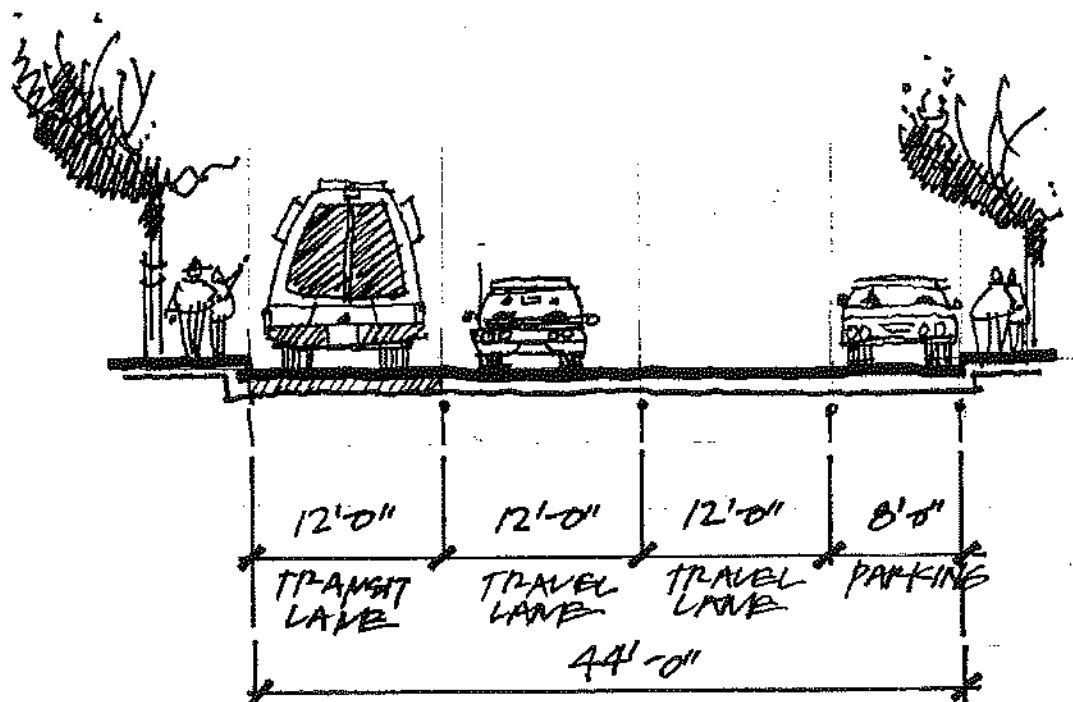
Mixed-flow lanes will be feasible on SR-905 east of Beyer Boulevard to Caliente Avenue. Although not justified in terms of traffic volumes, dedicated transit lanes can be provided on Otay Mesa Road from SR-905 (Caliente Avenue) to SR-125 by utilizing two existing travel lanes. By providing exclusive or dedicated transit lanes it will enhance transit operation in this area. Traffic volumes on Otay Mesa Road are projected to decrease significantly in 2010 with the anticipated construction completion of the adjacent SR-905. However, Otay Mesa Road will continue to operate at acceptable service levels after designating two lanes for use as dedicated transit lanes.

Transit priority traffic signal measures should be considered at all major intersections through this section of the alignment.

From the transition of Otay Mesa Road to SR-905 south to the border, the 625 will be located in mixed-flow lanes. This will include the section on Siempre Viva Road and Roll Drive to the Otay Mesa Border Crossing Station.

▪ **Long Term (2020)**

In the "Long Term" scenario, an alternative priority measure may be feasible for Seacoast Drive from Palm Avenue to Evergreen Drive. Seacoast Drive will provide a single transit lane that will travel south from Palm Avenue, 2-lanes of traffic (one lane in each direction) and on-street parking on the east side of Palm Avenue as illustrated in **Figure 4.7**. The return route will operate in mixed-flow traffic on Evergreen Drive to Third Street to Palm Avenue as shown in **Figure 4.8**.



**Figure 4.7:**  
Seacoast Drive Single Curbside Transit Lane



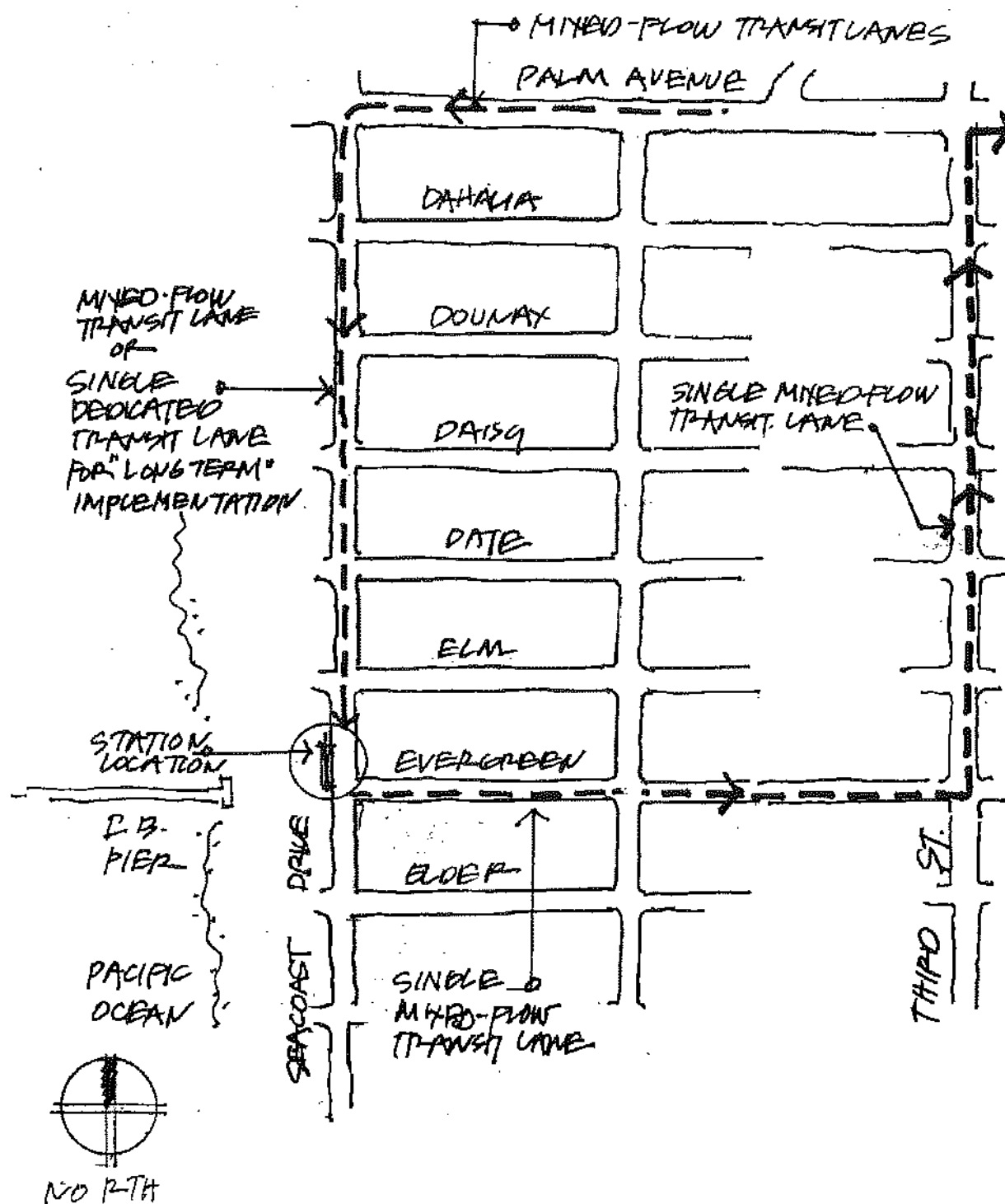
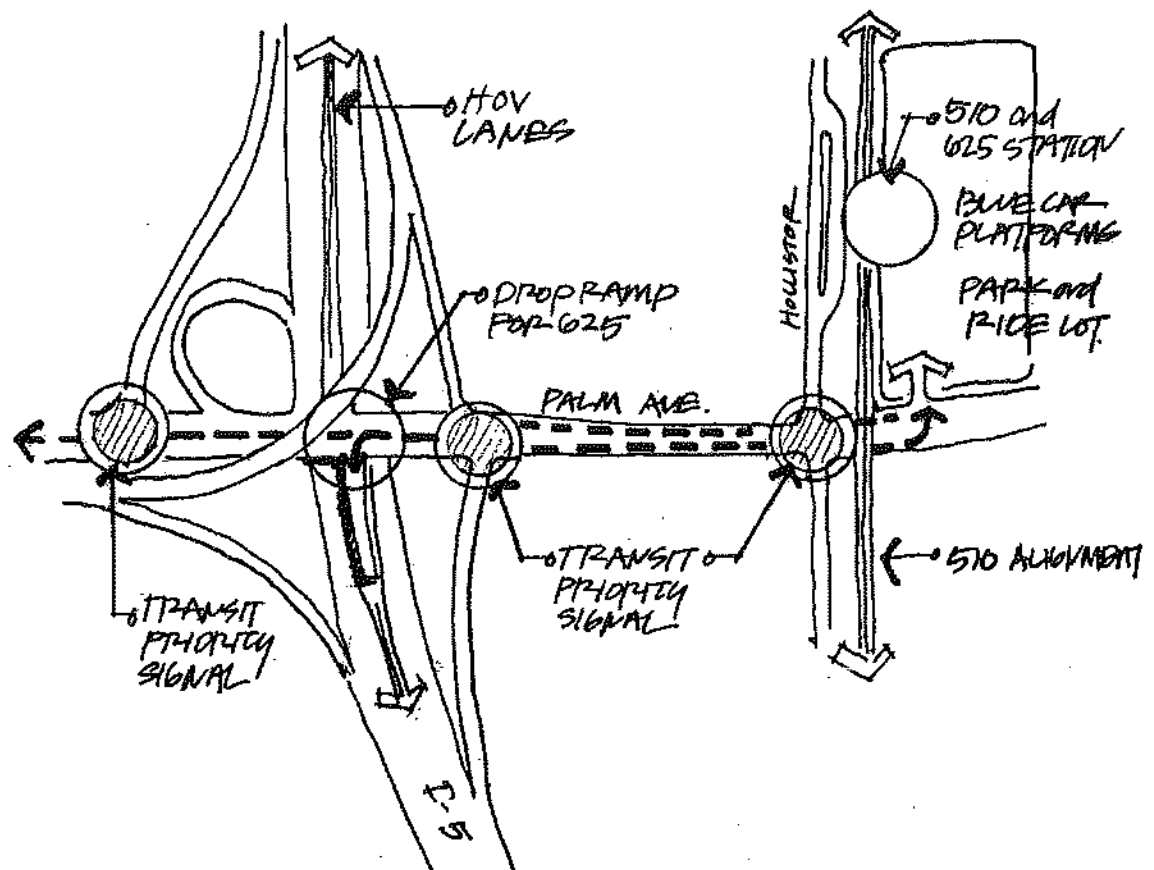


Figure 4.8:  
625 – Return Route to Palm Avenue

Also, the need for mixed-flow traffic operations from the Palm Avenue Station to the Iris Street Station may be eliminated by use of the I-5 HOV lanes that are planned south of Palm Avenue to SR-905. This will require a slight route deviation to provide service to the Palm Avenue Station. A drop ramp provided at Palm Avenue and I-5 will allow the 625 to reach the HOV lanes, as shown in **Figure 4.9**. The alignment will continue to Iris Street Station located at SR-905 using the same elevated transition structure as proposed for the 540 alignment and illustrated in **Figure 4.10** and **4.10A**. The time savings of high-speed operation on I-5 will justify such a deviation. Use of the I-5 HOV lanes will depend upon the implementation of the 540 station facilities and incorporating the 625 station needs at the Iris Avenue station.

The continuation of the dedicated transit lanes on SR-905 east of Beyer Boulevard will be appropriate to address the LOS D in this corridor. The transit lanes will be median serving and will continue east to Caliente Avenue as shown in **Figure 4.11**.

Otay Mesa Road will be able to accommodate fully dedicated transit lanes within its existing lane configuration which will improve transit operations. Two lanes on Otay Mesa Road may be converted from mixed-flow to dedicated transit lanes upon completion of the SR-905 segment located south of Otay Mesa Road, as shown in **Figure 4.12**. This conversion will be feasible due to the expected traffic volume decrease anticipated upon completion of SR-905.



**Figure 4.9:**  
Drop Ramp to Access I-5 HOV Lanes

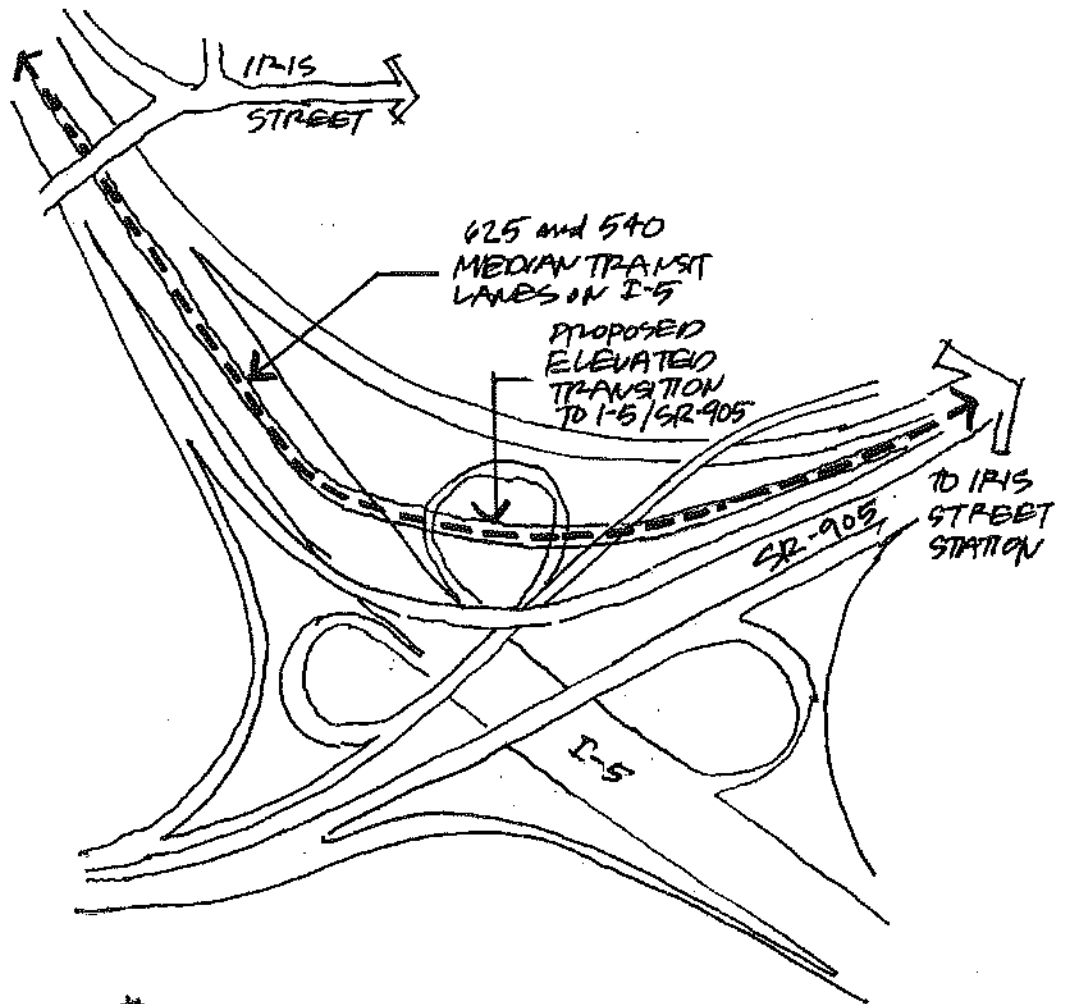


Figure 4.10:  
Access to SR-905 from the I-5 HOV Lanes

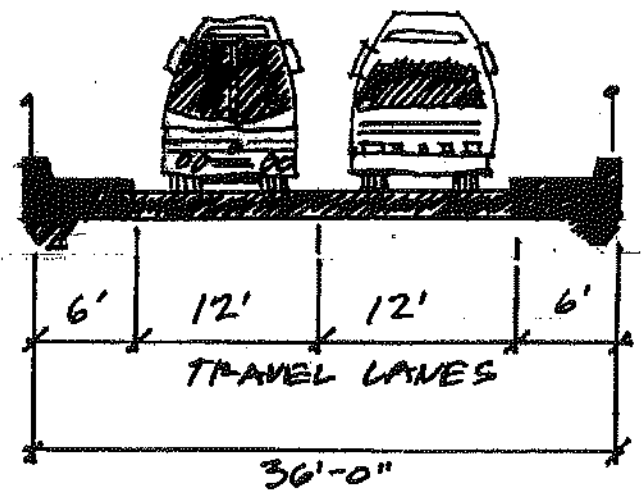


Figure 4.10A:  
Elevated Guideway from I-5 HOV Lanes to SR-905

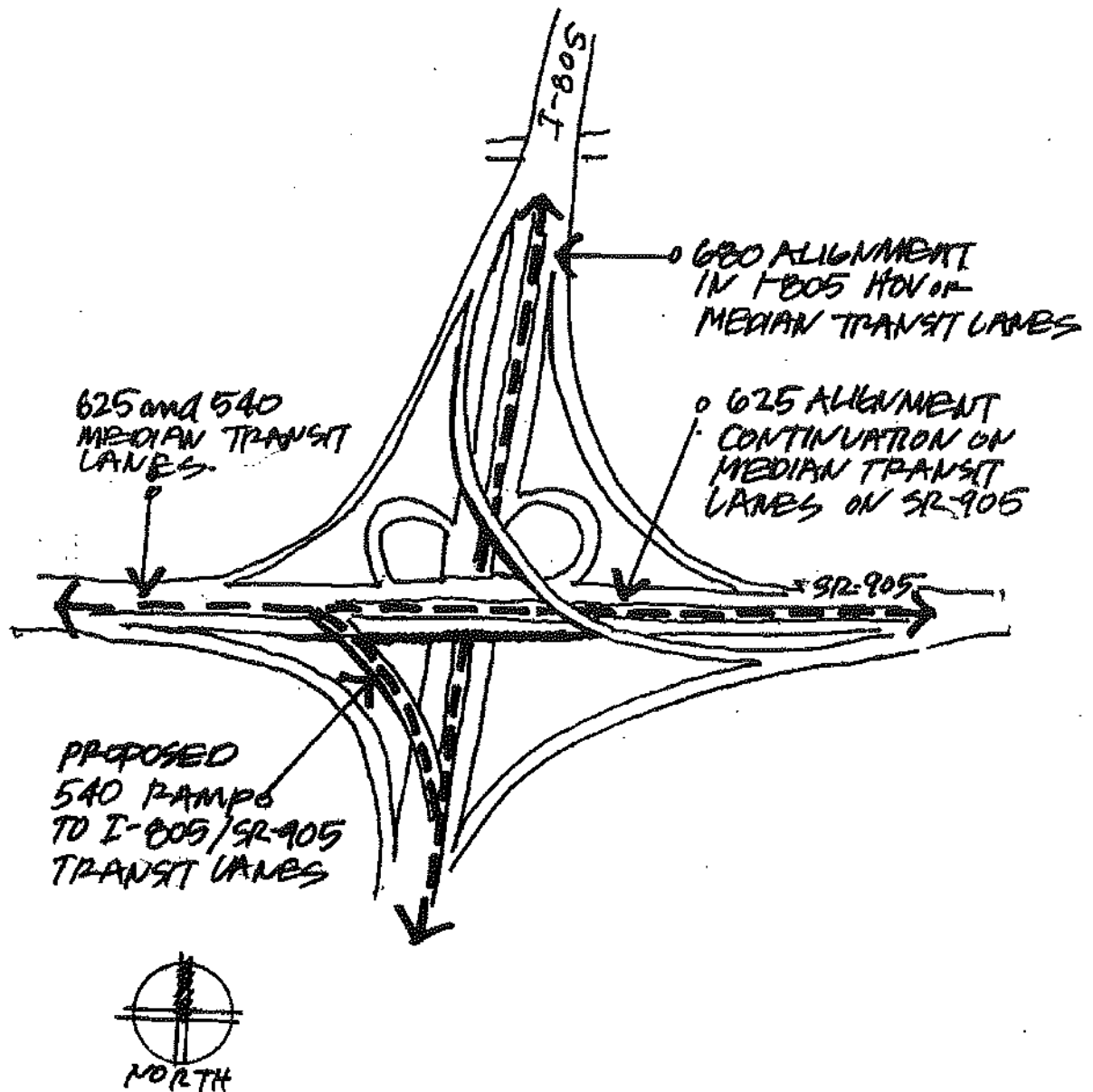
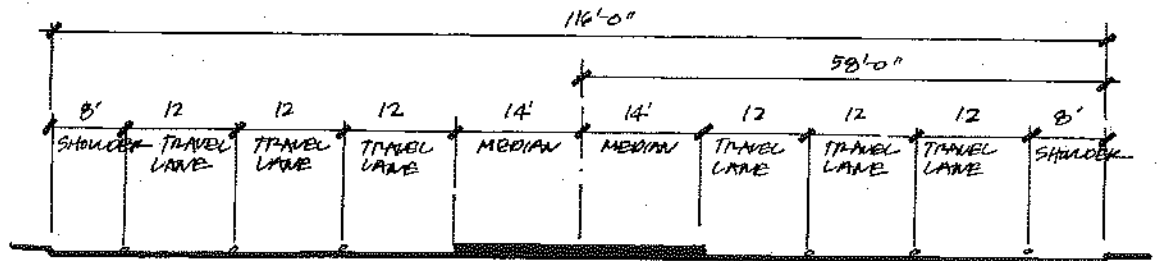
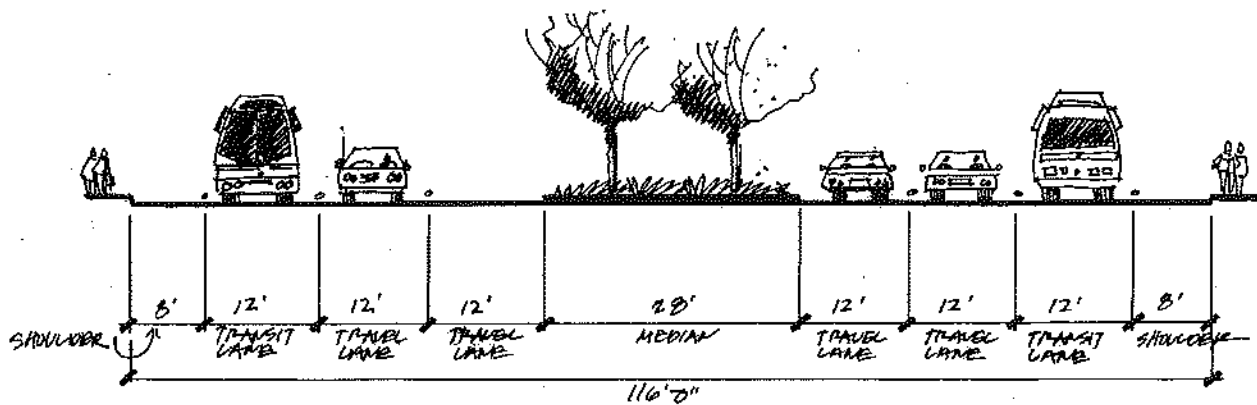


Figure 4.11:  
Median Transit Lanes in SR-905 from Beyer Boulevard to Caliente Avenue





Existing Cross Section



Proposed Cross Section with Dedicated Curbside Transit Lanes

Figure 4.12:  
Otay Mesa Road Cross Section

#### **D. Engineering and Environmental Issues**

The following are engineering, environmental issues potentially affecting the priority measures identified for the alignment.

##### ▪ **Seacoast Drive – Evergreen Avenue to Palm Avenue**

- The uses of a mixed-flow transit lane on Seacoast Drive will minimize the engineering issues for this narrow right-of-way. The area is considered fully developed making it difficult to expand the existing right-of-way for dedicated transit lanes without significant acquisition.
- Converting existing travel lanes for exclusive transit use will require a traffic analysis for support. The current level of congestion is already at levels LOS E and project to reach LOS F. Exclusives transit lanes are not seen as a feasible near term solution.
- Removal of recreational and commercial supportive on-street parking for exclusive transit lanes will be extremely difficult to achieve. The business and residential community may not view this as an acceptable solution.
- The 625 will have to use the existing residential streets (including Evergreen Drive and Third Street) to resume travel on Palm Avenue as it heads east towards I-5. This route is illustrated in **Figure-8**. Traffic impacts may be associated with the routing and future analysis should be prepared to address this issue.

##### ▪ **Palm Avenue - Seacoast Drive and 3<sup>rd</sup> Street**

- The uses of mixed-flow transit lanes on this segment of Palm Avenue Drive will minimize the engineering issues. However, with the many curb cuts and access points to the surrounding commercial properties operational issues may arise with curbside running transit vehicles. Future studies will need to review traffic and circulation patterns in this corridor to determine how it will affect future transit operations.
- This section of the route is two blocks in length and removal of on-street parking or acquiring additional width for dedicated transit lanes may be extremely difficult.
- No significant environmental issues are anticipated with this portion of the alignment. There will be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes. Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

##### ▪ **Palm Avenue - 3<sup>rd</sup> Street and 7<sup>th</sup> Street**

- The uses of mixed-flow transit lanes on this segment of Palm Avenue will minimize the engineering issues. There are curb cuts and left turn movements that could present operational issues for the transit vehicles.
- The intersection of Palm Avenue and 7<sup>th</sup> Street will require some modification to allow for the transition of the mixed flow transit lanes to median running transit lanes on Palm Avenue.

- No significant environmental issues are anticipated with this segment of the alignment based on the mixed-flow priority measure. There will be some improvements to the right-of-way allowing for the smooth transition of transit lanes to Palm Avenue. Future analysis should be prepared to address possible traffic impacts associated with the improvements and also transit priority signals.

▪ **Palm Avenue – 7th Street to I-5**

- The use of dedicated median running transit lanes along Palm Avenue between 7<sup>th</sup> Street and I-5 will require the existing curb to curb section of this segment to be modified.
- Relocating utilities may be required with the modification of the curb to curb section for the median running transit lanes.
- The landscaped median will be removed in order to accommodate the median running transit lanes.
- Improvements or changes to the right-of-way on Palm Avenue (SR-75) will involve Caltrans. Portions of Palm Avenue are also designated as a "Scenic Drive" and changes will be reviewed at the state level.
- Median left turn lanes at intersections within this segment may need to be modified to allow for the two median running transit lanes.
- The station at Saturn Boulevard will require an expansion of the existing right-of-way to allow for the station requirements and the left turn movements. Additional discussion is provided in *Section 4.3 Station Location and Types*.
- For future "long term" priority measures a drop ramp on Palm Avenue will be needed to provide access to the HOV lanes proposed for I-5.
- Environmental issues associated with this segment could include:
  - Aesthetics and land use - with the removal of the landscape median
  - Land use - with the widening of the right-of-way of Palm Avenue
  - Traffic – with the use of transit priority traffic signals

▪ **Palm Avenue - Hollister to Beyer Boulevard**

- The use of mixed-flow transit lanes will operate within the existing right-of-way in this segment of Palm Avenue. Traffic volumes are low on this segment and don't require dedicated transit lanes. No significant engineering issues are anticipated to be associated with this segment.
- No significant environmental issues are anticipated in this segment of the alignment. Turn movements by transit vehicles into and out of the Palm Avenue Trolley Station and the use of transit priority traffic signals could require a traffic analysis and circulation study.

- **Beyer Boulevard – Palm Avenue to SR-905**
  - The use of mixed-flow transit lanes in this segment of the alignment will not have significant engineering issues.
  - No significant environmental issues are anticipated with this segment of the alignment based on the mixed-flow priority measure. Future analysis should be prepared to address possible traffic issues associated with the mixed-flow transit lanes and also transit priority signals.
  - Traffic volumes are low on this segment and don't require dedicated transit lanes.
- **SR-905 – Beyer Boulevard to I-805**
  - No significant engineering issues are anticipated for both the "near term" (mixed-flow) or the "long term" (dedicated transit median). A wide unused median within SR-905 will allow for dedicated transit median running transit lanes.
  - No significant environmental issues are anticipated based on either "near" or "long term" priority measures. Future analysis should be prepared to address possible traffic issues associated with the accessing SR-905 from Beyer Boulevard.
- **SR-905 – I-805 to Otay Mesa Road at Caliente Avenue**
  - No significant engineering or environmental issues are anticipated for this segment of the alignment. A wide unused median within SR-905 will allow for the "long term" priority measure of dedicated median transit lanes.
- **Otay Mesa Road – Caliente Avenue to Proposed SR-125**
  - Otay Mesa Road can accommodate fully dedicated transit lanes within the existing lane configuration. Due to the expected traffic volume decrease anticipated upon completion of SR-905, two (2) lanes on Otay Mesa Road may be converted from travel lanes to dedicated transit lanes. No significant engineering issues are anticipated for this segment of the alignment.
  - No significant environmental issues are anticipated based on the dedicated transit lanes. Future analysis should be prepared to address possible traffic issues associated with the dedicated transit lanes and also the proposed transit priority signals.
- **Proposed SR-125/SR-905 to Otay Mesa Border Crossing**
  - The alignment could operate in the future extension of SR-905 to the Otay Mesa Border Crossing without significant engineering or environmental issues.
  - Provisions for a wider right-of-way will be needed to allow for a proposed station and access lanes for this section of the alignment and is addressed in *Section 4.3 Station Location and Types*.



## **E. Feasibility of Priority Treatment Implementation**

### ▪ **Near Term (2010) and Long Term (2020)**

Mixed-flow operations may be the only near term solution for Seacoast Drive. A single bi-directional lane located in the middle of the Seacoast Drive could be provided, if on-street parking were prohibited along the entire proposed segment. However, this will require the removal of on-street parking that currently serves several uses including residential units, commercial establishments, restaurants, the pier and the beach. Also, a single bi-directional lane is not the preferred priority treatment for this segment, as it will lead to other operational issues.

In the long term, the feasibility of a single one-way transit lane on Seacoast Drive should be reviewed. This will require the elimination of a portion of on-street parking along Seacoast Drive and will impact other residential streets (3<sup>rd</sup> Street) with "transit" traffic. The reduction of on-street parking may be an issue that the Coastal Commission will have to review and approve. However, a parking management study may be able to reduce if not eliminate the lost parking impacts.

Mixed-flow operations should continue for travel on Palm Avenue between Seacoast Drive and 7<sup>th</sup> Street. The use of mixed-flow transit lanes may be the most feasible priority treatment for this segment of the alignment. Although this portion of the corridor will benefit from dedicated transit lanes, the implementation of such lanes will be difficult to achieve. The implementation of dedicated transit lanes will require the removal of on-street parking and the elimination of existing travel lanes or the elimination of left turn median lanes. Again, the on-street parking serves several different uses including residential units, commercial establishments, a restaurant, the pier, and the beach.

Provisions for exclusive transit lanes along Palm Avenue east of 7<sup>th</sup> Street / Silver Strand Boulevard are also feasible. The roadway is very wide and exclusive dedicated transit lanes could be provided if the median, existing bike lanes and parking lanes were re-striped from curb to curb. On-street parking will be impacted from this approach and traffic service may decline as a result of the re-design.

Operation in mixed-flow traffic east of I-5 to SR-905 via Beyer Boulevard will be feasible. Creation of dedicated lanes in this portion of the corridor is feasible, but problematic and not recommended. Median left turn lanes currently exist along Palm Avenue east of I-5 to Beyer Boulevard and on Beyer Boulevard from Palm Avenue to SR-905. Provisions for center running transit lanes will require the elimination of left turn access to many of the area's commercial establishments and residential neighborhoods.

SR-905 will be able to accommodate transit lanes either on existing right-of-way or through expansion within the existing median (although not recommended based on daily volume levels in the near term). Expansion along the portion of SR-905 from Beyer Boulevard to I-805 will not disturb any surrounding uses as a large median area remains undeveloped within the freeway (Development of dedicated median running transit lanes within SR- 905 between I-5 and I-805 is included in one of the alternatives for the 540 alignment).

Otay Mesa Road will be able to accommodate fully dedicated transit lanes within the existing lane configuration. Two lanes on Otay Mesa Road may be converted from mixed-flow to dedicated transit lanes upon completion of the SR-905 segment located south of Otay Mesa Road. This conversion is feasible due to the expected traffic volume decrease anticipated upon completion of SR-905.

Mixed-flow transit lanes on SR-905 south of Otay Mesa Road are quite feasible in mixed-flow lanes. Mixed-flow lanes could also be included on the surface streets leading to the proposed station near the Otay Mesa Border Crossing.

## **F. Conclusions**

The 625 alignment is comprised of numerous areas of significant congestion that will require multiple methods of priority measures to ensure reliable service in the alignment's corridor.

- The segment of the alignment located on Palm Avenue west of 7<sup>th</sup> Street to the route terminus on Seacoast Drive is comprised of limited right-of-way widths, numerous curb cuts and existing development that will limit transit priority measures.
- The segment of the alignment located on Palm Avenue west of 7<sup>th</sup> Street to I-5 is comprised of roadways with congestion levels that indicate poor service levels in both "near term and long term" scenarios. If transit were to operate in mixed-flow lanes reliable service will be questionable in this portion of the corridor.
- Mixed-flow traffic operations may be acceptable for the segment of the alignment located east of I-5 because of the area's high level of traffic service.
- The segment of the alignment located on SR-905 from Beyer Boulevard east to Caliente Avenue will operate in LOS C (2010) or D (2020) conditions. Mixed-flow traffic operations west of the Beyer Boulevard interchange within SR-905 may be feasible through 2020. However, by 2020 the incorporation of dedicated transit lanes should be used to ensure reliable service.

## 4.3 STATION LOCATION AND TYPES

### A. Seacoast Drive and Evergreen Avenue Station

The Seacoast Drive and Evergreen Avenue station serves the central core of the Imperial Beach community and is situated close to a significant regional activity center, the Imperial Beach Pier. The general area surrounding this proposed station is heavily urbanized and has experienced recent re-development comprised of commercial projects, mixed-use projects and an ocean front park.

#### ▪ Right-of-Way Requirements

The station will be a curbside station located at or near the Imperial Beach Pier on the west side of Seacoast Drive just north of Evergreen Avenue. The right-of-way requirement for a curbside station is 15-feet x 150 feet as illustrated in **Figure 1.7** in Chapter 1. This will accommodate a 15-foot boarding and alighting platform for each station and the length will allow for multiple transit vehicles. Another consideration for this station size is its ability to accommodate the 933 and 934 Blue Car.

To minimize the station requirements the "turn-around" for the transit vehicles will occur on the nearby residential streets as illustrated in **Figure 4.13**.

#### ▪ Land Use Integration

##### **Existing (1999)**

The SANDAG existing land use plan illustrates a number of land uses within close proximity to the proposed station. The land uses located west of the station within its ¼ mile radius are comprised of predominately moderate to low-density residential neighborhoods. Commercial uses are also located the station's ¼ mile radius but are adjacent to Seacoast Drive. In general the existing land uses located within close proximity of the station are illustrated in **Figure 4.14** and include the following:

- Commercial uses
- Residential uses
- Park and open space
- Public facilities (sheriff station, lifeguard station, pier)

##### **Planned (2020)**

The proposed 2020 land use plan illustrates a significant increase in commercial use along Seacoast Drive. Mixed-use areas are identified directly northwest and southwest of the station and illustrated in **Figure 4.14**.

##### **Opportunities**

The 2020 land use plan provides for numerous opportunities for transit supportive development with the large areas devoted to commercial and mixed-uses near the transit station. Existing underutilized sites could provide the opportunity for future infill development to increase the density and mix of uses within the surrounding area.

In the future it may be appropriate to provide additional mixed-use opportunities to increase the transit supportive uses close to the station. The provision for intensifying other surrounding land uses, particularly residential uses, will strengthen the "walk up" capability of the 625 station as shown in **Figure 4.14**.

#### ▪ **Access**

The primary pedestrian access to the station will be from the surrounding area's existing streets and associated sidewalks. The residential neighborhood to the east of the station is designed in a grid pattern of inter-connecting streets that lead to Palm Avenue. Linking the station will be direct and efficient with the continued use of the existing sidewalks associated with these streets.

Design improvements to the residential streetscape experience could be implemented to enhance the pedestrian experience to the transit station. The use of pedestrian "bulb outs" where crossings occur at Seacoast Drive is another improvement that could be incorporated with the overall design of the future station.

The station's close proximity to the beach, pier, and park/open space areas will facilitate a direct, safe, and easy pedestrian access to these public facilities. On Seacoast Drive the majority of the buildings' fronts face the street providing for a pleasant pedestrian experience. Future development should continue to build on this approach thereby enhancing the pedestrian experience and interest to the station.

In general it may be beneficial to improve the pedestrian access to the surrounding neighborhood with a comprehensive streetscape enhancement program. This program will be part of the overall station development plan and should include the following streets as illustrated in **Figure 4.15**:

- Seacoast Drive
- Evergreen Avenue
- Elder Avenue
- Elm Avenue
- Elkwood Avenue
- Date Avenue
- Daisy Avenue

#### ▪ **Seacoast Drive and Evergreen Avenue Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

##### **Engineering Issues**

- The most significant engineering issue for this portion of the alignment is how to provide the "turn around" for the transit vehicle to initiate its return trip. In this heavily urbanized area providing for a turn around for a large articulated vehicle at this station location is problematic.



- The most practical option that was studied is utilizing the local residential streets, as shown in **Figure 4.13**, to return back to Palm Avenue. Other options included:
  - Eliminating park, residential and commercial uses surrounding the station location to provide for a cul-de-sac allowing for a turn-around.
  - Extending the alignment further to the south (and further out of direction) allowing the turn around to occur at Imperial Beach Boulevard. The turn around requirements would eliminate some existing uses or may encroachment into existing developed properties.

Neither of these other two options seemed plausible.

#### **Environmental Issues**

- Noise may become an issue depending on the final transit vehicle type and the route selection. Using the local residential streets that are narrow and with shallow building set backs may present noise problems.
- Final station design and location of the transit bay may present a visual issue. Public views to the ocean and park may be blocked by station design features or by the transit vehicles. During final design placement and location of the station features should be considered the nearby ocean and park views.
- A traffic study may need to be prepared to determine the impact of the transit traffic on Seacoast Drive, Evergreen Avenue, and Third Street.

#### **Community Issues**

- Using the local residential streets, especially Evergreen Avenue, as part of the alignment may meet opposition by the residents living on the selected corridor.
- Public views of the ocean or park being blocked by future transit improvements or vehicles may be opposed by the local community. Care should be given to insure that views are not impacted by the transit improvements.

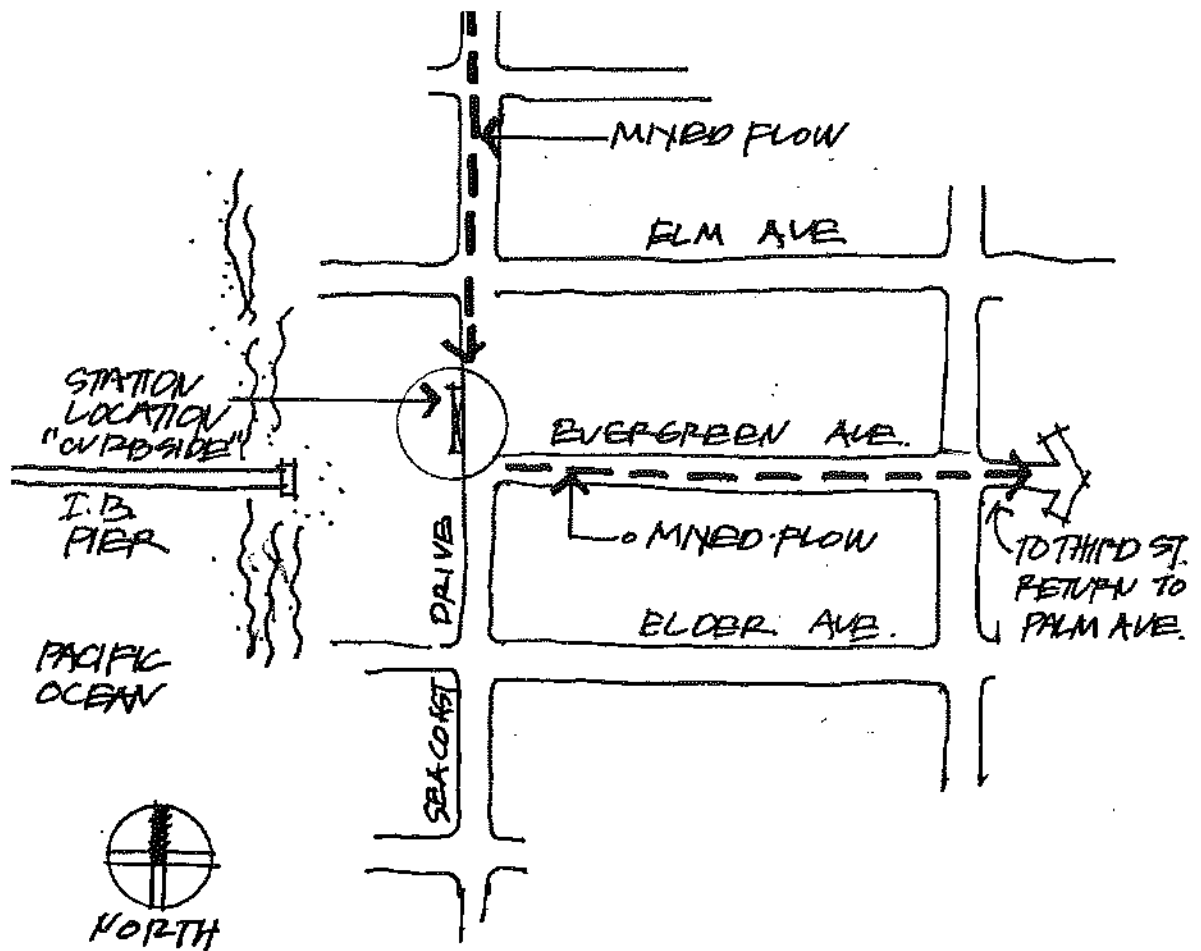


Figure 4.13

625-Seacoast Drive and Evergreen Avenue Station Location



EXISTING LAND USE



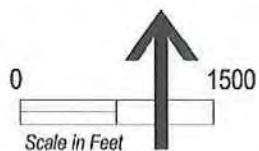
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES

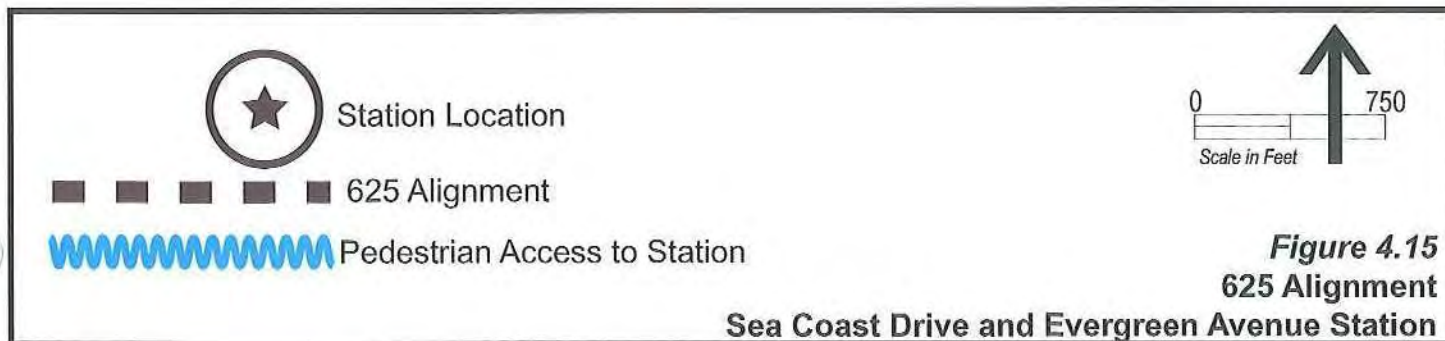
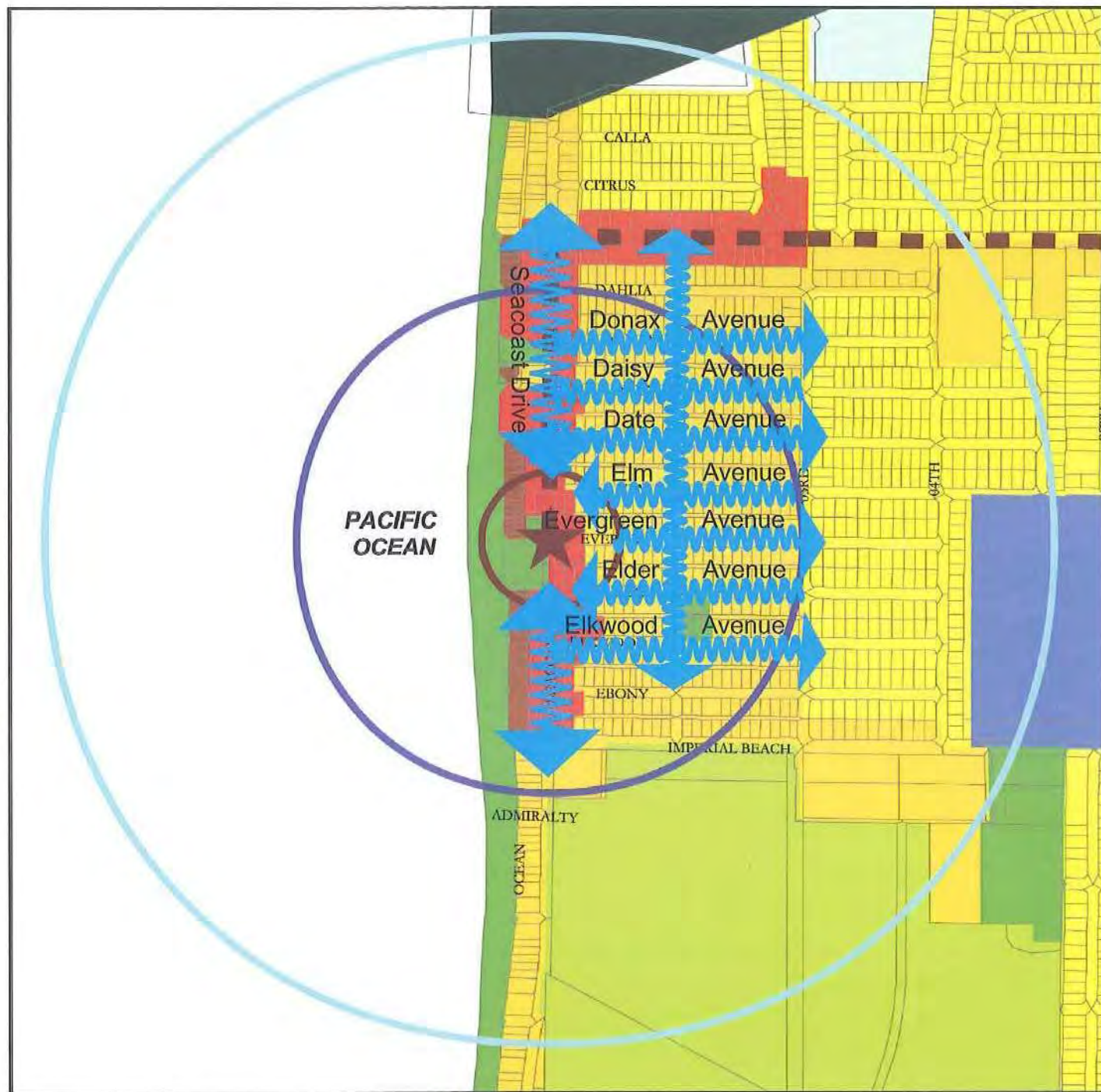


## LAND USE LEGEND

- |                             |                               |              |
|-----------------------------|-------------------------------|--------------|
| ★ Car Station               | Religious Facilities          | Water Bodies |
| — Car Service               | Other Public Services         |              |
| 1/4 Mile Buffer             | Military                      |              |
| 1/2 Mile Buffer             | Elementary Schools            |              |
| Single Family Residential   | Senior High Schools           |              |
| Multi Family Residential    | Parks                         |              |
| Mobile Home Parks           | Open Space Reserves/Preserves |              |
| Hotel/Motel                 | Beach                         |              |
| Extractive Industry         | Vacant / Undeveloped          |              |
| Retail and Strip Commercial | Mixed Use                     |              |

**Figure 4.14**  
**625 Alignment**  
**Seacoast Drive and Evergreen Avenue Station**







## **B. Palm Avenue and 7<sup>th</sup> Street Station**

The Palm Avenue and 7<sup>th</sup> Street Station will be located in an area absent of current activity center(s) but will be centrally located to serve the neighborhoods north and south of Palm Avenue. Based on the priority treatments for this area two curbside stations are proposed. Future redevelopment of the area consisting of more intensive land uses will help in supporting the success of the proposed station. Vehicular access to both Imperial Beach and the City of Coronado occurs at this intersection.

### ▪ **Right-of-Way Requirements**

The stations will be curbside stations as shown in **Figures 1.6** and **1.7**. The westbound station will be a "far-side station" and will be located on the east side of 7<sup>th</sup> Street. The eastbound alignment will be served by a "near-side station" that will be located on the east side of the 7<sup>th</sup> Avenue station adjacent to the landscaped triangle between Delaware and 7<sup>th</sup> Street as shown in **Figure 4.16**.

The general area of the station will require additional right-of-way for the eastbound station. The parkway is currently 10-feet in width. An additional 5-feet will be required for the station platform area. The 150-feet in length will cross over existing curb cuts or driveways accessing the adjacent parcels. Also, the roadway narrows in this area as it transitions back into Palm Avenue.

The westbound station can encroach into the existing landscape for the platform area thereby not requiring additional private property for the station right-of-way. It should be noted that the entire intersection at this station should be further evaluated to ensure safe traffic movement is still maintained when the station is implemented.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing uses located within close proximity to the station are low intensity and include residential uses (a mobile home park) and commercial uses (retail and office).

The land uses located west of the station within its ¼ mile radius consist of predominately moderate to low-density residential neighborhoods. Commercial uses are also located north of the station within its ¼ mile radius and are typically adjacent to either Palm Avenue or Silver Strand Boulevard as illustrated in **Figure 4.17**.

#### **Planned (2020)**

The 2020 proposed land use within the station's ¼ and ½ mile radii show an increase in retail/commercial and mixed-use areas. The new land uses will be located north and south of the proposed station and the majority of the mixed-uses will be located outside of the station's ¼ mile radius as illustrated in **Figure 4.17**.

#### **Opportunities**

It is recommended that additional mixed-use development opportunities occur closer to the proposed Palm Avenue and 7<sup>th</sup> Street station as shown in **Figure 4.17**. Mixed-use development could occur to the northwest of 7<sup>th</sup> Street and on the north side of Silver Strand Boulevard. The addition of mixed-use options will provide for additional transit supportive uses in close proximity to the station. It is recommended that these

mixed-use options be comprised of residential as the dominant use and commercial/retail and even office being supportive and / or secondary uses.

▪ **Access**

As previously mentioned, the proposed station will be located in an area absent of activity center(s) but will be centrally located to serve the neighborhoods north and south of Palm Avenue. The primary access to the station will be provided from the surrounding area's existing streets and associated sidewalks. The residential neighborhood to the south of the station is designed in a grid pattern of connecting streets leading to the station. Located north of the station are neighborhoods that are also served by a grid of streets typically found in older communities. The use of the existing sidewalks associated with these streets will link directly and efficiently to the station, as shown in **Figure 4.18**.

Future mixed-use developments will be able to continue to access the station by using these sidewalks. However, improvements to the network of sidewalks will be important to ensure a safe and pleasant pedestrian environment. The inclusion of a pedestrian refuge island may also be appropriate for the crossing of the Silver Strand Boulevard.

In general the existing street sidewalks that will provide access to this station will benefit from a comprehensive streetscape enhancement program. This program will be part of the overall station redevelopment plan and should include at least the following streets.

- Palm Avenue
- Silver Strand Boulevard
- 7<sup>th</sup> Street
- Delaware Street
- Carolina Street

▪ **Palm Avenue and 7<sup>th</sup> Street Station Issues**

For the proposed Palm Avenue and 7<sup>th</sup> Street Station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- The narrow right-of-way in this area needs to be widened. This widening is to accommodate the proposed east bound station and to ensure the through travel movement and transition to the median transit lanes on Palm Avenue can be provided.
- Acquisition of adjacent property is needed to provide for the full 15-feet required for the proposed station platforms.
- The existing property's curb cuts for access may be affected by the length of the east bound transit station.

- The west bound station will encroach into the existing landscaped median.

#### Environmental Issues

- Due to the nature of the intersection design and the location of the station a traffic study may be needed. The study should review the intersection to ensure that the intersection have safe traffic movements and is not impacted by the stations.
- If additional right-of-way is required this may create a land use issue that will need to be addressed.

#### Community Issues

- Any encroachment into the park by the west bound station or right-of-way expansion may be considered an issue with the community.

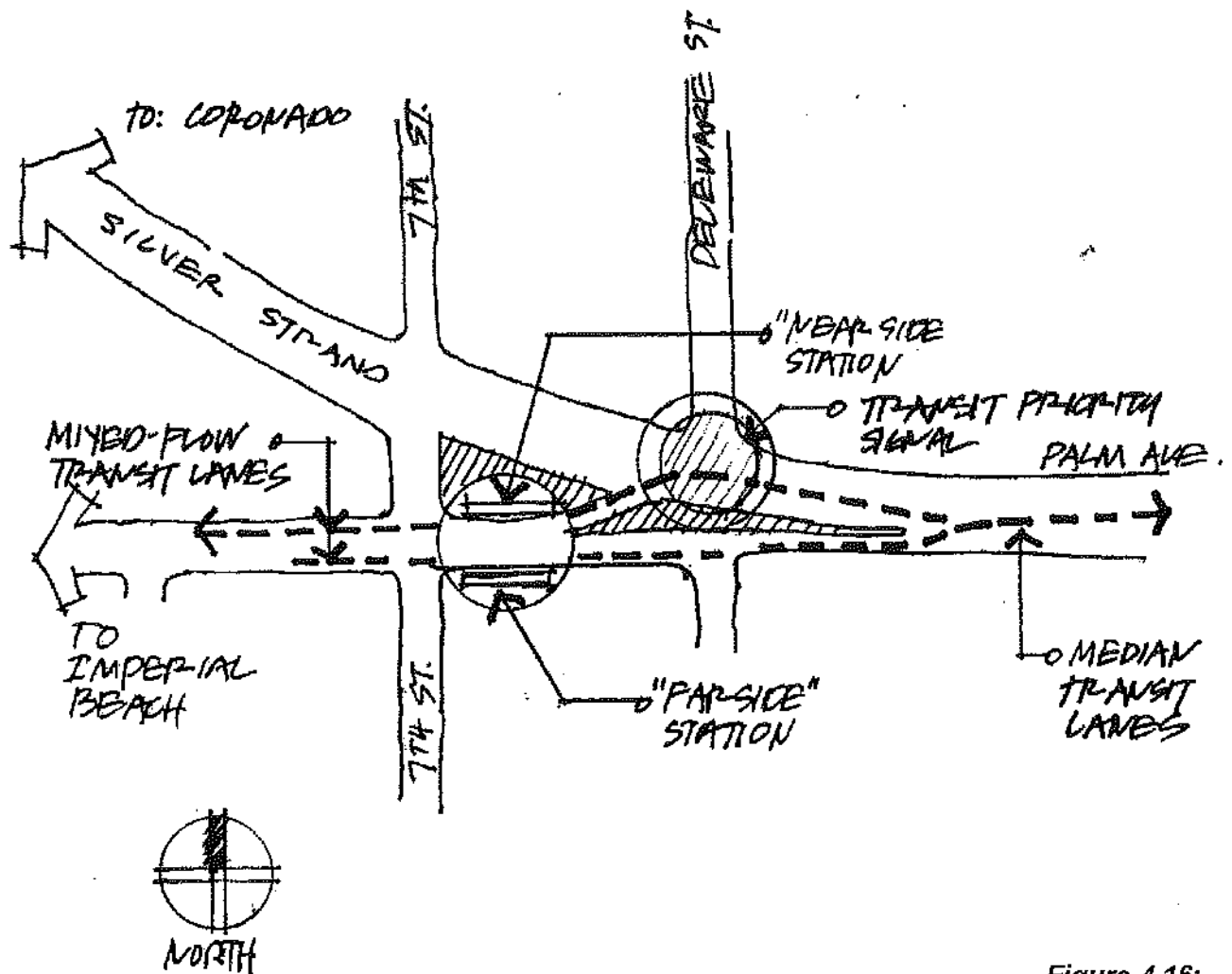
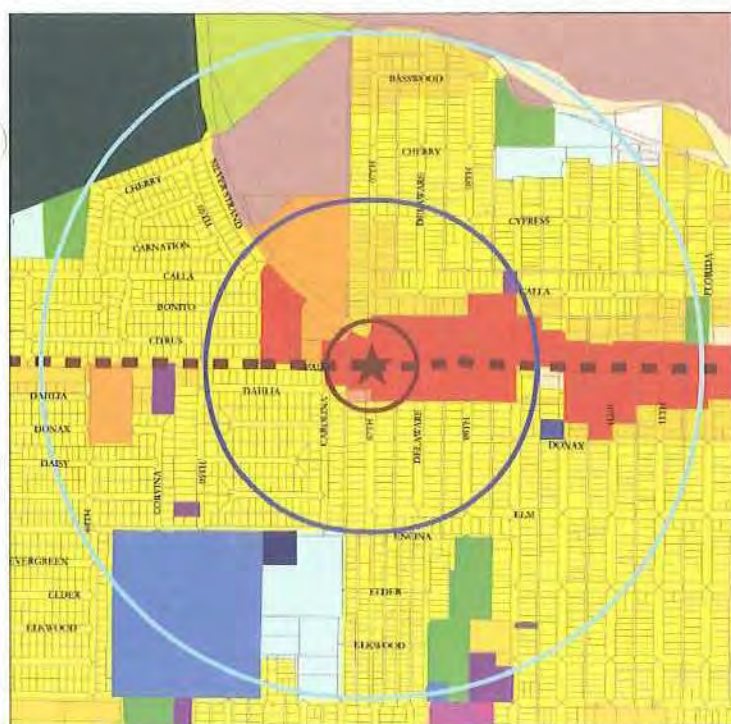


Figure 4.16:  
625- Palm Avenue and 7<sup>th</sup> Street Station Location



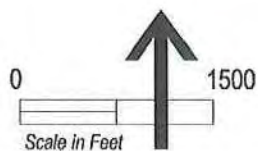
EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES

### LAND USE LEGEND

|                           |                             |                               |
|---------------------------|-----------------------------|-------------------------------|
| (*) Car Station           | Post Offices                | Vacant / Undeveloped          |
| - - - Car Service         | Other Public Services       | Parks                         |
| 1/4 Mile Buffer           | Communications / Utilities  | Open Space Reserves/Preserves |
| 1/2 Mile Buffer           | Retail and Strip Commercial | Military                      |
| Single Family Residential | School District Office      | Gov't Office / Civic Center   |
| Multi Family Residential  | Senior High Schools         | Mixed Use                     |
| Mobile Home Parks         | Elementary Schools          |                               |
| Hotel/Motel               | Fire Stations               |                               |
| Extractive Industry       | Libraries                   |                               |
| Industrial Parks          | Religious Facilities        |                               |

**Figure 4.17**  
**625 Alignment**  
**Palm Avenue and 7th Street Station**





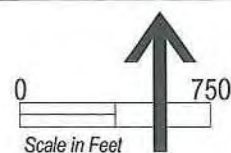
Station Location



625 Alignment



Pedestrian Access to Station



**Figure 4.18**  
**625 Alignment**  
**Palm Avenue and 7th Street Station**

### **C. Palm Avenue and Saturn Boulevard Station**

The Palm Avenue and Saturn Boulevard station will be located just west of I-5 at the intersection of Palm Avenue and Saturn Boulevard. Based on the priority treatments for this portion of the alignment a median type station is proposed. The station's surrounding area is developed with commercial and residential land uses but there is an absence of significant regional/sub-regional activity centers. The area's future redevelopment should include more intensive uses to help support the success of the station.

#### ▪ **Right-of-Way Requirements**

The stations will be a median type station similar to the one illustrated in **Figure 1.9** in *Chapter 1*. A median type station will serve median transit lanes and will be located on the west side of Saturn Boulevard as illustrated in **Figure 4.19**. This type of station will require additional right-of-way of approximately 36-feet x 150-feet from the intersection to the west of Saturn Boulevard. This will allow for the station platforms plus the left turn pocket as illustrated in **Figure 4.20**. The station's future development will require careful redesign of the intersection to minimize the impacts to the adjacent parcels.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

SANDAG's land use plans identify numerous land uses associated within the stations  $\frac{1}{4}$  mile to  $\frac{1}{2}$  mile radii as shown in **Figure 4.21**. However, the predominate mix of land uses near the station are residential and commercial uses. Generally speaking the existing uses consist of:

- Low-density residential development to the south of the station and a multi-family apartment adjacent to the station.
- Retail commercial uses to the west and north of the station.
- Mobile home parks to the northwest.
- Light industrial/extraction (salt production) uses along the perimeter of the station's  $\frac{1}{2}$  mile radius.

##### **Planned (2020)**

The 2020 proposed land use within the station's  $\frac{1}{4}$  mile radius will intensify the land uses surrounding the station. The land use plan will provide an intensification of residential uses and will also provide for additional commercial uses areas as illustrated in **Figure 4.21**.

##### **Opportunities**

It is recommended that mixed-use opportunities occur near the Palm Street and Saturn Boulevard Station as shown in **Figure 4.21**. The proposed mixed-use areas will all be located north and south of the Palm Avenue and in close proximity of the station.

The area located northeast of the Palm Avenue intersection (Home Depot site) is particularly suitable for a future mixed-use development project. It is recommended that residential uses be the dominant use with commercial and office being secondary or supportive uses. The mixed-use areas located south of and facing Palm Avenue will be more suited for commercial uses. Residential uses will be located behind Palm Avenue.

#### ▪ **Access**

In this location, Palm Avenue is congested with both vehicular and transit traffic. The area is not a pleasant or inviting pedestrian experience. The pedestrian connections to the proposed station should be carefully designed to encourage pedestrian movement.

Encouraging the pedestrian access from the surrounding neighborhood, especially the mixed-use areas, will require significant improvements to encourage potential transit patrons to walk to the station. Also, Palm Avenue is extremely wide at this location discouraging pedestrian crossings.

The existing streets sidewalks will be the primary means to access the station from the surrounding neighborhoods. However, new pedestrian access should also be developed in the proposed mixed-use area north of Palm Avenue. These new pedestrian access points may not be specifically associated with any streets.

In general the pedestrian access will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Palm Avenue should be wide, pleasant and provide a sense of safety. This enhancement program will be part of the overall station redevelopment plan and should include, as a minimum, the following streets as shown in **Figure 4.22**:

- Palm Avenue
- Saturn Boulevard
- 18<sup>th</sup> Street

#### ▪ **Palm Avenue and Saturn Boulevard Station Issues**

For the proposed Palm Avenue and Saturn Boulevard Station the following are possible issues affecting the implementation of station improvements.

##### **Engineering Issues**

- Acquisition of additional right-of-way is needed to meet the station requirements and left turn movements at the Palm Avenue and Saturn Boulevard intersection.
- A median transit station will have to take pedestrian safety and accessibility into consideration. Locating the station as close to the existing signalized intersection will help elevate safety concerns.
- The expanded right-of-way may require the relocation of utilities and storm water drainage facilities.

***Environmental Issues***

- A traffic study will be needed to define traffic impacts associated with the intersection and the station location.
- Environmental issues may arise if the expansion of Palm Avenue to accommodate the station and left turn pocket encroaches into the drainage channel on the north east side of Palm Avenue.
- If additional right-of-way is required this may create a land use issue that will need to be addressed.

***Community Issues***

- The business community may object to the location of the station, land acquisition needed for the station, and the possibility of restricted left turn movements.



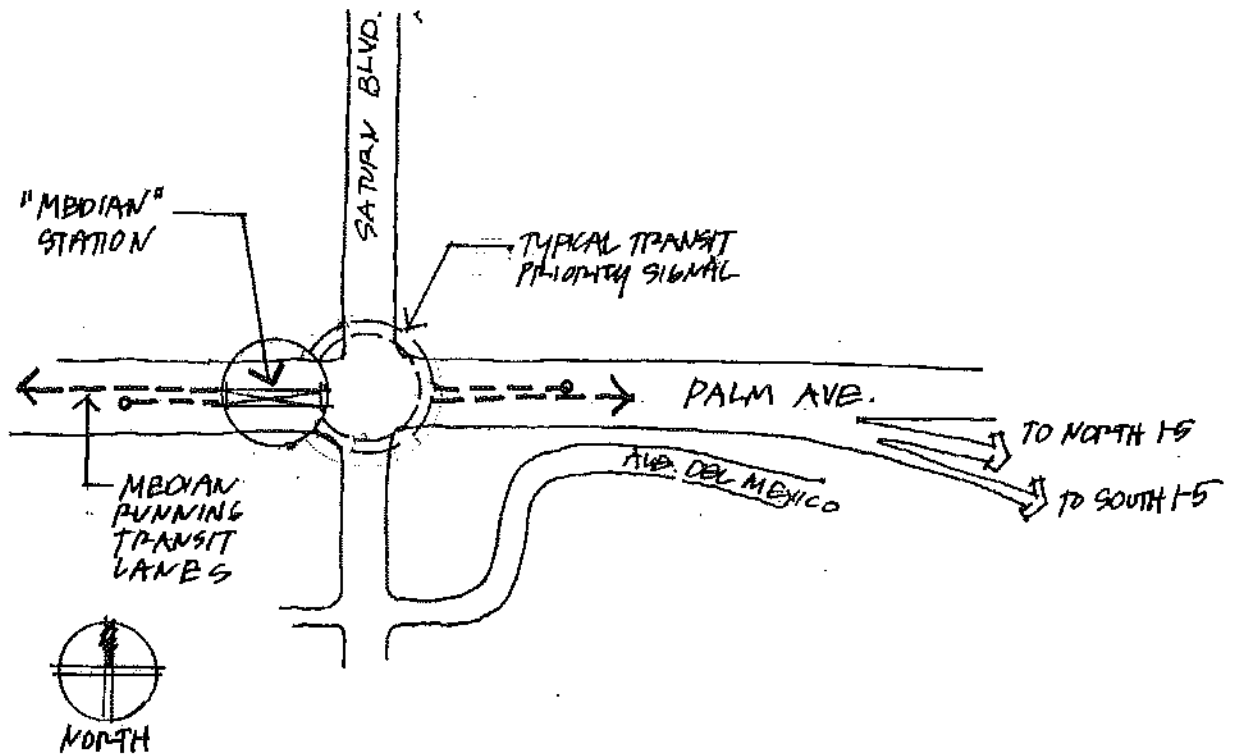


Figure 4.19:  
625- Palm Avenue and Saturn Boulevard Station Location

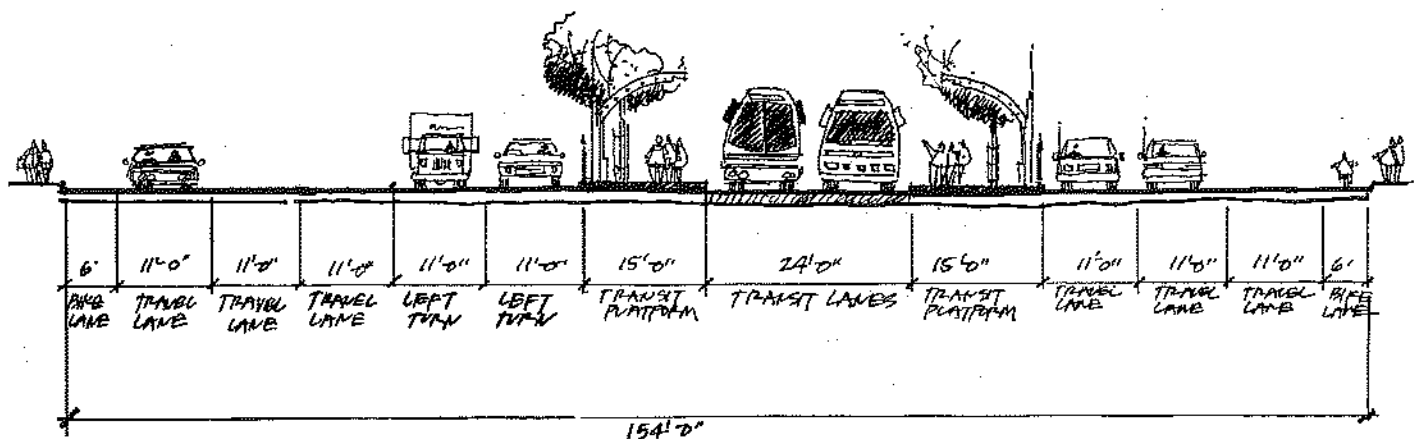


Figure 4.20:  
625- Palm Avenue and Saturn Boulevard Station Cross Section



EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

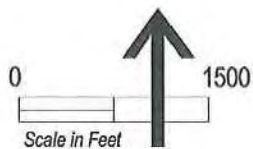
- Residential (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Commercial (Primary)
- Office (Secondary)



OPPORTUNITIES

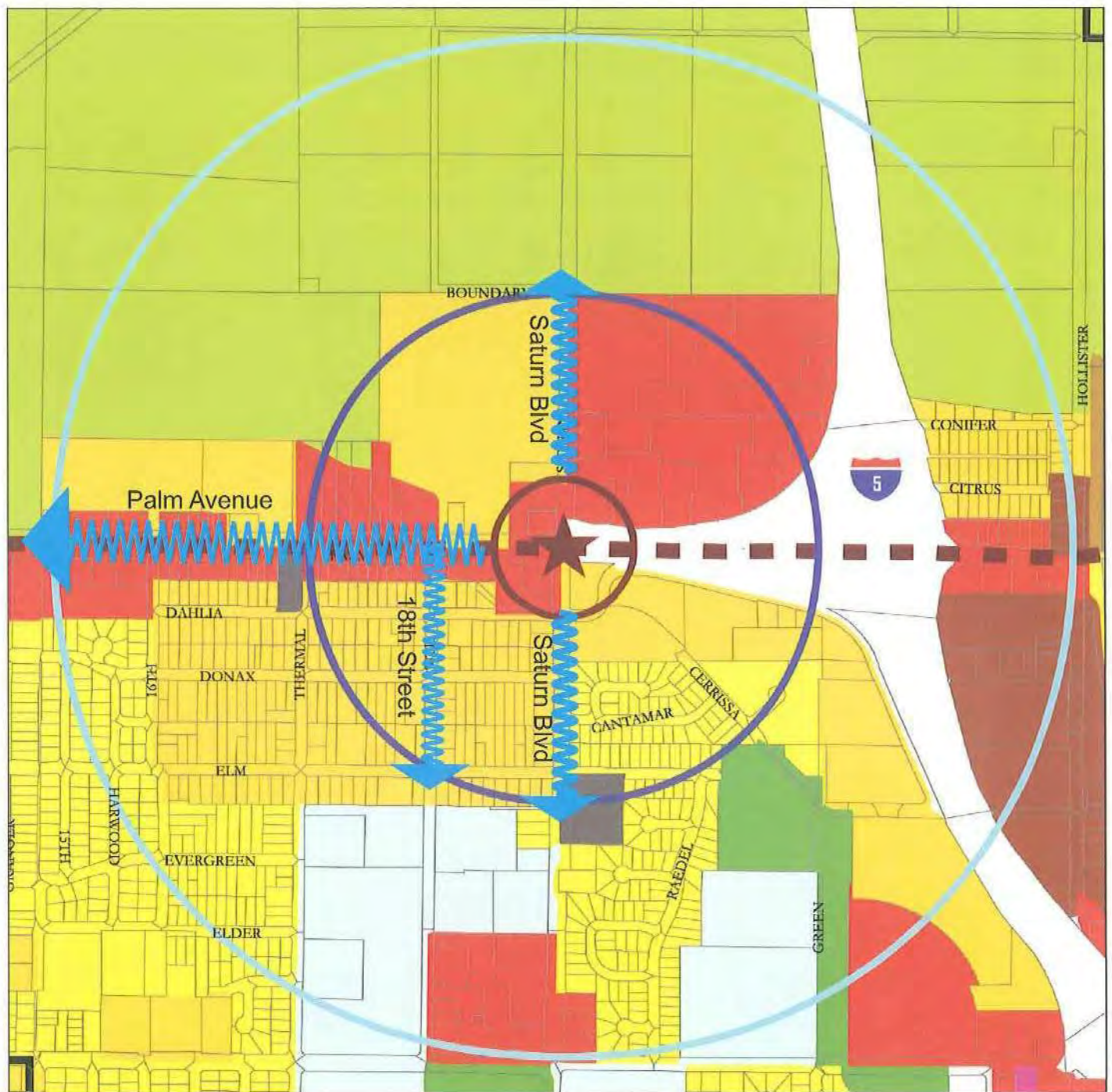


### LAND USE LEGEND

|                           |                                 |                                      |
|---------------------------|---------------------------------|--------------------------------------|
| (*) Car Station           | Industrial Parks                | Religious Facilities                 |
| - - - Car Service         | Warehousing / Public Storage    | Vacant / Undeveloped                 |
| 1/4 Mile Buffer           | Other Transportation / Freeways | Parks                                |
| 1/2 Mile Buffer           | Communications / Utilities      | Open Space Reserves/Preserves        |
| Spaced Rural Residential  | Retail and Strip Commercial     | Rail Station/Transit Center          |
| Single Family Residential | Junior High Schools             | Junkyard/Dump/Landfill               |
| Multi Family Residential  | Senior High Schools             | Mixed Use                            |
| Mobile Home Parks         | Elementary Schools              | Agriculture / Orchards and Vineyards |
| Hotel/Motel               | Fire Stations                   |                                      |
| Extractive Industry       | Other Recreation                |                                      |

**Figure 4.21**  
**625 Alignment**  
**Palm Avenue and Saturn Boulevard Station**



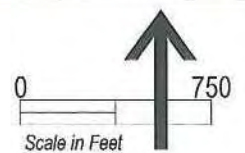


Station Location

625 Alignment



Pedestrian Access to Station



**Figure 4.22**  
**625 Alignment**  
**Palm Avenue and Saturn Boulevard Station**

#### **D. Palm Avenue Trolley Station**

The existing Palm Avenue Station currently serves the 510 alignment and will be one of the station stops shared by the 625 alignment as shown in **Figure 4.23**. The station is primarily a park and ride facility and is also a transfer hub for three Blue Car services: the 932, 933, and the 934. Neither of the existing Blue Car service enters the station's parking area. One of the Blue Car service stations is located off of Hollister Street just north of Palm Avenue and is a "pull-out" type station. The other Blue Car service station is located on Palm Avenue west of Hollister.

Currently the Palm Avenue Station provides 506 daily parking spaces immediately east of the trolley station platform. The parking lot associated with the station typically operates at approximately 40 to 50 percent of its capacity on a typical weekday during peak period.

- **Right-of-Way Requirements**

It is anticipated that no additional land or right-of-way requirements will be needed for this station to serve the 625 alignment. Redesign for the station layout will be needed within the existing parking area to provide improvements for Blue and Red Car services. The redesign will be needed to create a station with easy transfer capabilities for both the Blue Car and Red Car service. These improvements should be easily handled within the existing station area footprint.

- **Land Use Integration**

##### **Existing (1999)**

The existing land use plans identify numerous land uses associated within the station's ¼ mile to ½ mile radii as shown in **Figure 4.24**. The land use plan illustrates a mix of residential uses (including mobile homes), commercial uses, religious facilities, and the Otay River Valley Open Space Preserve on the outer northern edge.

Generally speaking the existing uses consist of low density residential development to the west and east of the station, retail commercial and auto related uses to the west and low intensive recreational uses (golf driving range and go-cart track) to the north. The land uses west of I-5 consist primarily of residential, commercial and light industrial/extraction uses (salt production).

##### **Planned (2020)**

The 2020 proposed land use within the station's ¼ mile radius will intensify the uses surrounding the station. The land use plan provides significant areas devoted to mixed-use and an intensification of residential uses, as illustrated in **Figure 4.24**.

##### **Opportunities**

The 2020 land use plan provides for numerous opportunities for transit supportive development with large areas devoted to mixed-use and commercial uses near the transit station. Additional opportunities to provide other mixed-use areas should be explored on the west side of Hollister Street as illustrated in **Figure 4.24**. In this area the primary use will be residential with commercial or office being supporting uses. In the future this type of intensification will be appropriate in providing an increase of transit supportive uses near the station.



### ▪ **Access**

Because the Palm Avenue Station is an existing park and ride facility the pedestrian access from the parking lots or the Blue Car service will be fairly direct with few conflicts on site. However, to encourage pedestrian access from surrounding neighborhoods, especially the mixed-use areas, significant improvements are needed to encourage potential riders to walk to the station.

The existing street sidewalks will be the primary means to access the station from the surrounding neighborhoods. These sidewalks will benefit from a comprehensive streetscape enhancement program.

As a minimum the pedestrian access on Palm Street should be wide, pleasant and provide a sense of safety. The streets should promote an interconnected network of streets leading pedestrians to the transit station. This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 4.25**:

- Palm Avenue
- Hollister Street
- Harris Avenue
- 24<sup>th</sup> Street
- Conifer Avenue
- Citrus Avenue

### ▪ ***Palm Avenue Trolley Station Issues***

For the proposed Palm Avenue Trolley Station the following are possible issues affecting the implementation of station improvements.

#### ***Engineering Issues***

- The redesign of the Palm Avenue Trolley Station to accommodate the 625 alignment raises no significant engineering issues.

#### ***Environmental Issues***

- No significant environmental issues are anticipated. A traffic study may be needed to assess transit vehicles turn movements into and out of the station and transit priority signalization.

#### ***Community Issues***

- No significant community issues are anticipated at this station.

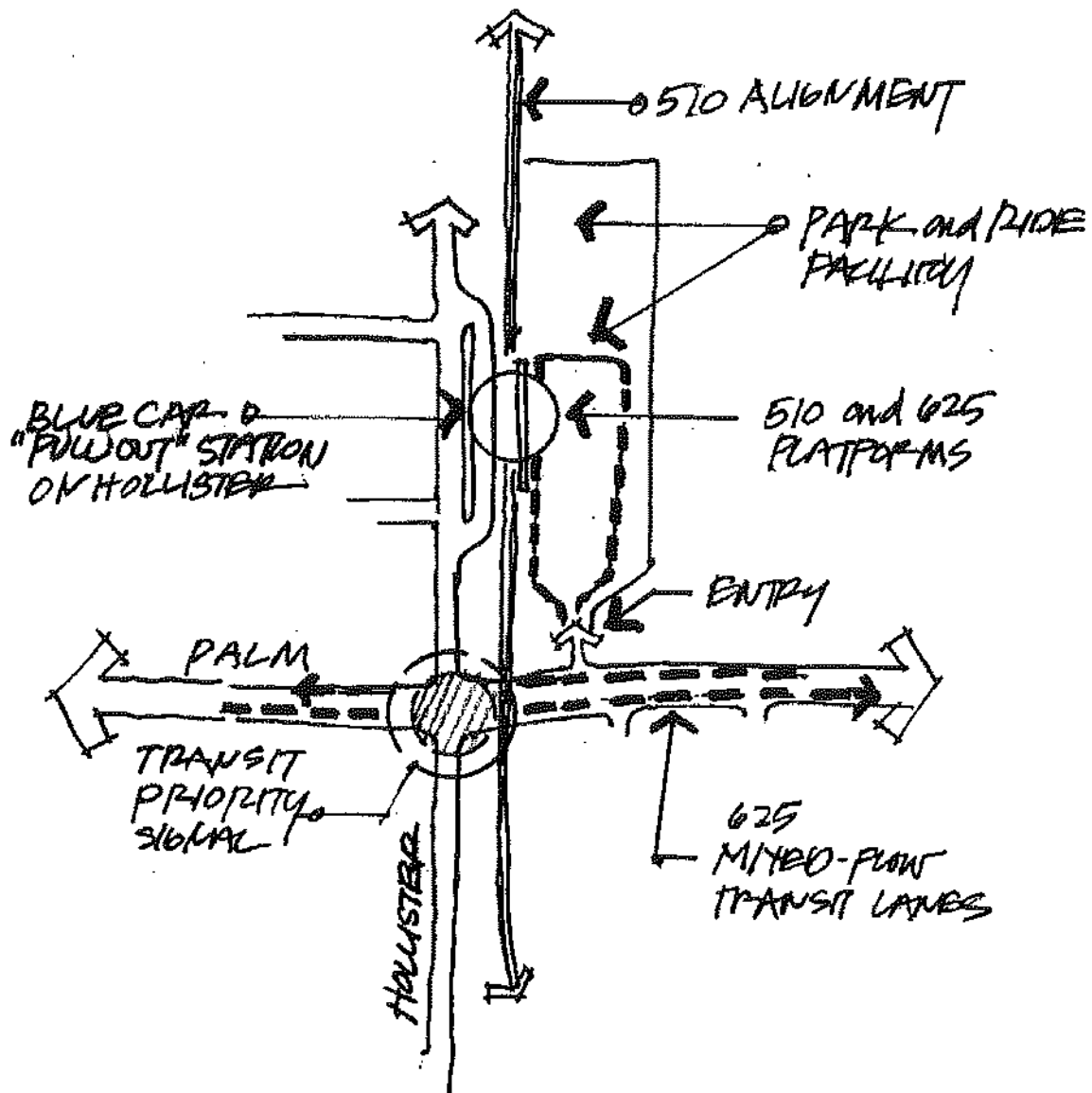
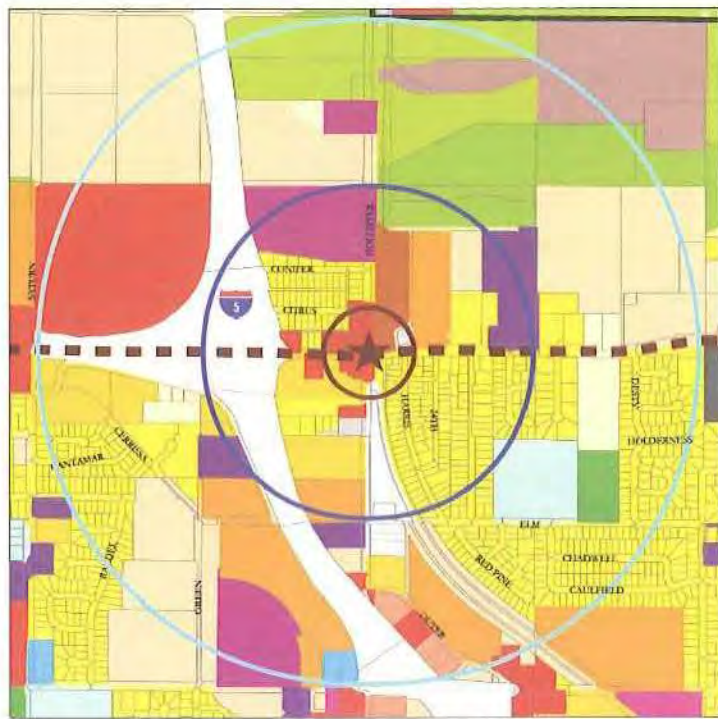


Figure 4.23:  
625- Palm Avenue Station Location



EXISTING LAND USE

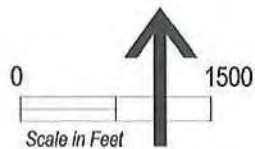


2020 PLANNED LAND USE

Mixed Use Opportunities  
 ■ Residential (Primary)  
 ■ Commercial (Secondary)



OPPORTUNITIES

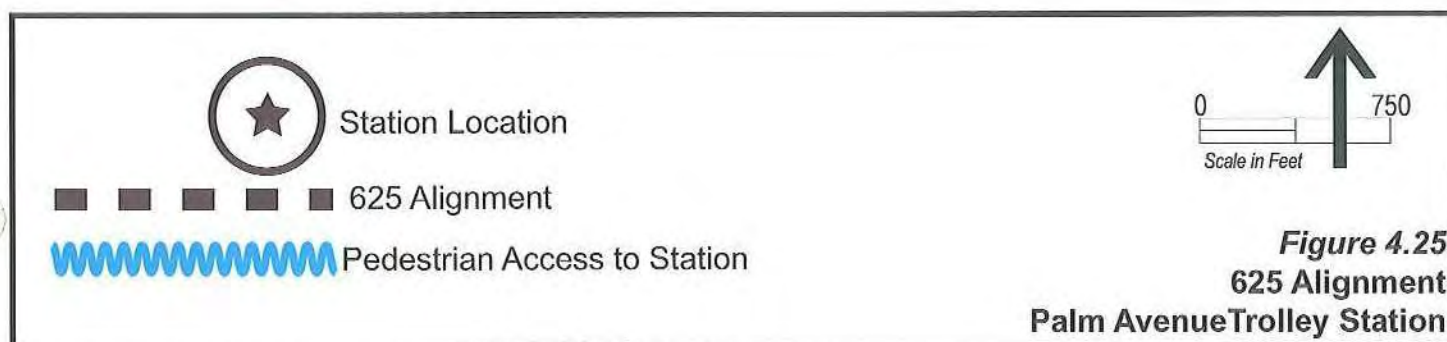
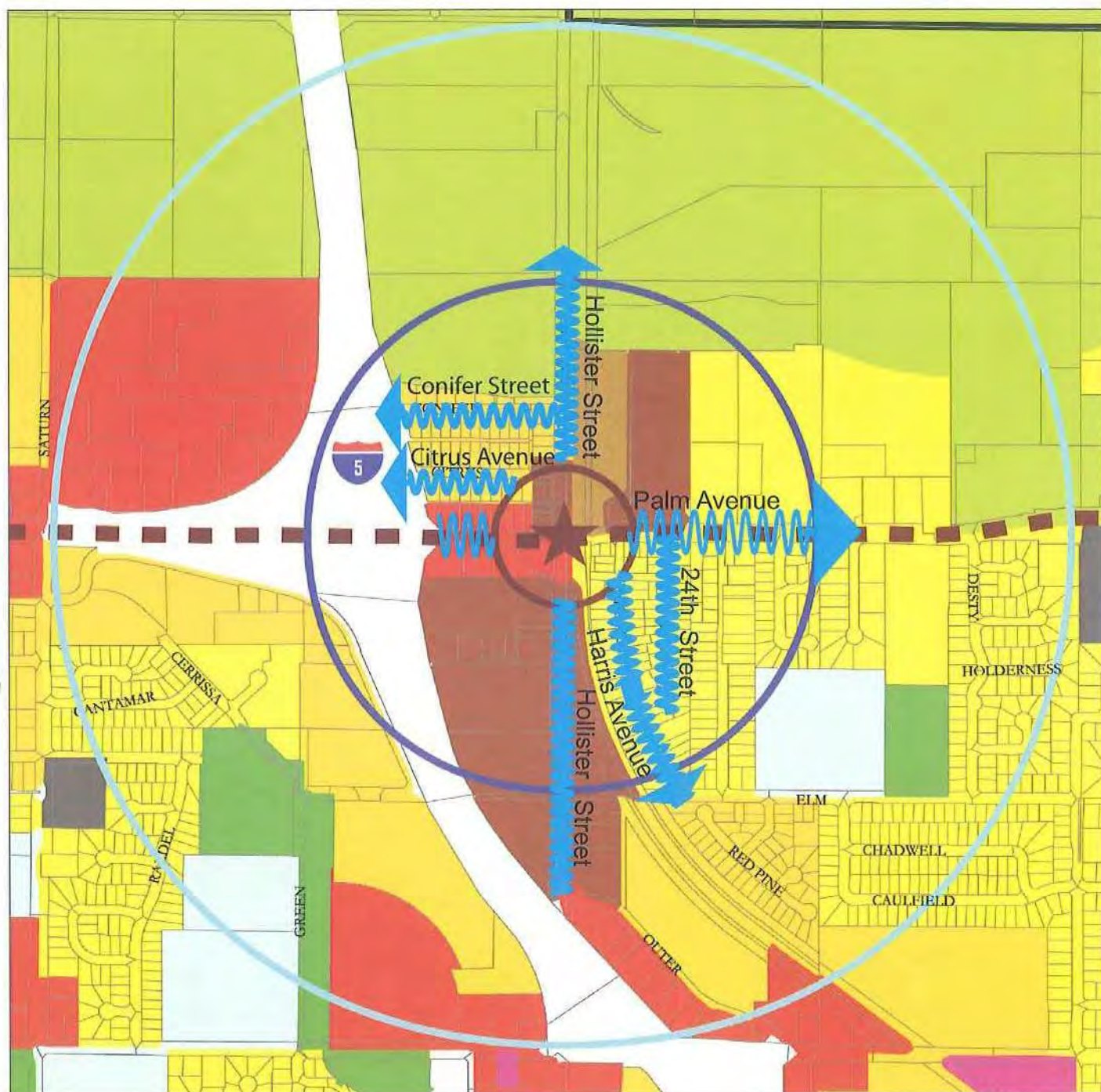


### LAND USE LEGEND

|                           |                              |                                      |
|---------------------------|------------------------------|--------------------------------------|
| ★ Car Station             | Industrial Parks             | Open Space Reserves/Preserves        |
| — Car Service             | Warehousing / Public Storage | Rail Station/Transit Center          |
| 1/4 Mile Buffer           | Freeways                     | Mixed Use                            |
| 1/2 Mile Buffer           | Communications / Utilities   | Agriculture / Orchards and Vineyards |
| Spaced Rural Residential  | Retail and Strip Commercial  | Other Recreation                     |
| Single Family Residential | Elementary Schools           |                                      |
| Multi Family Residential  | Fire Stations                |                                      |
| Mobile Home Parks         | Religious Facilities         |                                      |
| Hotel/Motel               | Vacant / Undeveloped         |                                      |
| Extractive Industry       | Parks                        |                                      |

**Figure 4.24**  
**625 Alignment**  
**Palm Avenue Trolley Station**







### **E. Iris Avenue Trolley Station**

The Iris Avenue station is currently a park and ride facility and a significant transfer hub for Blue Car services. The 625 will be joined at this station by the 510 and the following Blue Car routes: 901, 905, 932, 933, and 934. The current Blue Car service platforms are located off-street adjacent to the existing 510 station platform.

The 540 Station is also planned for this area and will require the relocation of the existing 510 station south of Iris Avenue as proposed in the *540 Alignment Study*. This relocation will require that the Blue Car platforms be relocated to allow for easy transfer to the new Red and Yellow Car Service.

Approximately 134 daily parking spaces are provided at the station site. The parking lot operates at about 50 percent of its capacity on a typical weekday during the peak commuter period relying heavily on transfer connections. The low percentage of the parking lot can be attributed to the Iris Avenue station being a significant transfer hub for the Blue Car service. This will greatly influence the design of the station and the relationship / location of the Blue Car platforms to the Red and Yellow Car platforms

#### ▪ **Right-of-Way Requirements**

Initially, it is anticipated that no additional right-of-way will be required for the 625 operation at the Iris Street station. However, with the implementation of the 540 alignment it will require a station relocation and redesign. There are several alternative locations for the new transfer station, which are discussed in the *540 Alignment Study* under the *540 Iris Avenue Station*.

Until the 540 station location and design are determined, the 625 will serve the existing station by diverting from Beyer Boulevard at Del Sol to 30<sup>th</sup> Street to the station as illustrated in **Figure 4.26**. A platform will be located in the area of the existing parking lot alongside the existing Blue Car platforms.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

SANDAG's existing land use plan illustrates predominately residential uses surrounding the Iris Street Station with industrial uses located to the north and southeast. A school site is located to the west of the station. Currently, south of SR-905 the land uses are predominately single-family residential uses of low to moderate density. Located in the immediate vicinity of the existing trolley tracks south of SR-905 are a park and school site, a freight container storage facility, and vacant land surrounded by the SR-905 on-ramp as illustrated in **Figure 4.27**.

##### **Planned (2020)**

The 2020 proposed land use within the station's ¼ mile radius will continue to be predominately residential with intensification of residential uses to the northwest of the station. Also as illustrated in **Figure 4.27**, a small mixed-used development is illustrated just to the south and east of where the 510 station is identified.

##### **Opportunities**

The station will still operate as a significant "park and ride" facility but the overall design and function of this station must work in concert with the 540 station, the 510 Red Car service and the adjacent Blue Car transfer facilities. Intensification of the

surrounding land uses, particularly residential uses, could strengthen the "walk-up" capability for all of the alignments using this station site.

Providing additional mixed-use opportunities than currently shown will again provide for more transit supportive uses. Existing underutilized sites could provide the opportunity for future infill projects to increase the density and mix of uses within the surrounding area. Mixed-use developments could also occur on the south and southeast side of the Iris Avenue station as shown in **Figure 4.27**. For these mixed-use opportunities, it is recommended that residential be the dominant use with office and commercial being supportive and or secondary.

#### ▪ **Access**

Pedestrian access will be dependent on the final location of the 625 platforms. However, it is anticipated that the platforms will work in concert with the 510 and Blue Car service platforms. Because the Iris Avenue Station is an existing park and ride facility, the pedestrian access from the parking lots or the Blue Car service will be fairly direct with few conflicts on site. However, to encourage pedestrian access from the surrounding neighborhoods, especially the mixed-use areas, significant station improvements are needed.

The existing street sidewalks will be the primary means to access the station from the surrounding neighborhoods. In addition, these sidewalks will benefit from a comprehensive streetscape enhancement program. The surrounding neighborhoods are predominately residential with employment areas north and south of SR-905. Direct pedestrian access from the residential neighborhoods and the employment areas should be improved. This enhancement program will be part of the overall station redevelopment plan and includes the following streets as shown in **Figure 4.28**:

- Beyer Boulevard
- Iris Street
- Dairy Mart Road
- 30<sup>th</sup> Street

#### ▪ **Iris Avenue Trolley Station Issues**

For the proposed Iris Avenue Trolley Station the following are possible issues affecting the implementation of station improvements.

##### ***Engineering Issues***

- The initial implementation of the 625 will not have any significant engineering issues associated with the current Iris Avenue Trolley Station. When the 540 begins to operate out of the Iris Avenue Station an entire redesign will be required including the 625, 540 and also the 510 station platforms. These requirements are further discussed in the *Chapter 3 of the 540 Alignment Study*.

### Environmental Issues

- > No significant environmental issues are anticipated for the initial implementation of the 625 station. A traffic study may be needed to assess transit vehicles turn movements into and out of the station and transit priority signalization.

### Community Issues

- > No significant community issues are anticipated for the initial implementation of the 625 alignment at this station.

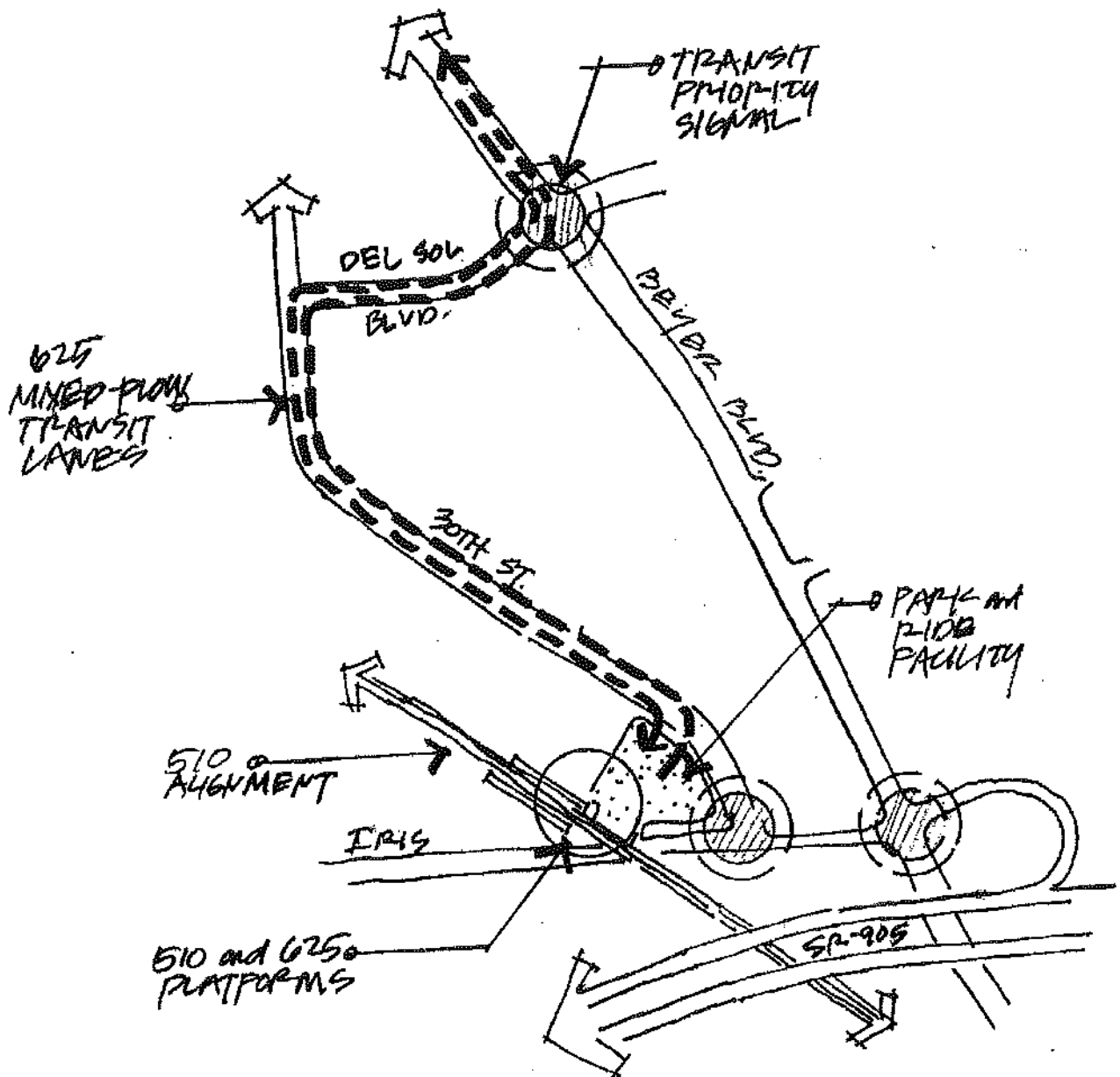


Figure 4.26:  
625- Iris Avenue Station Location



EXISTING LAND USE



2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)

## Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)



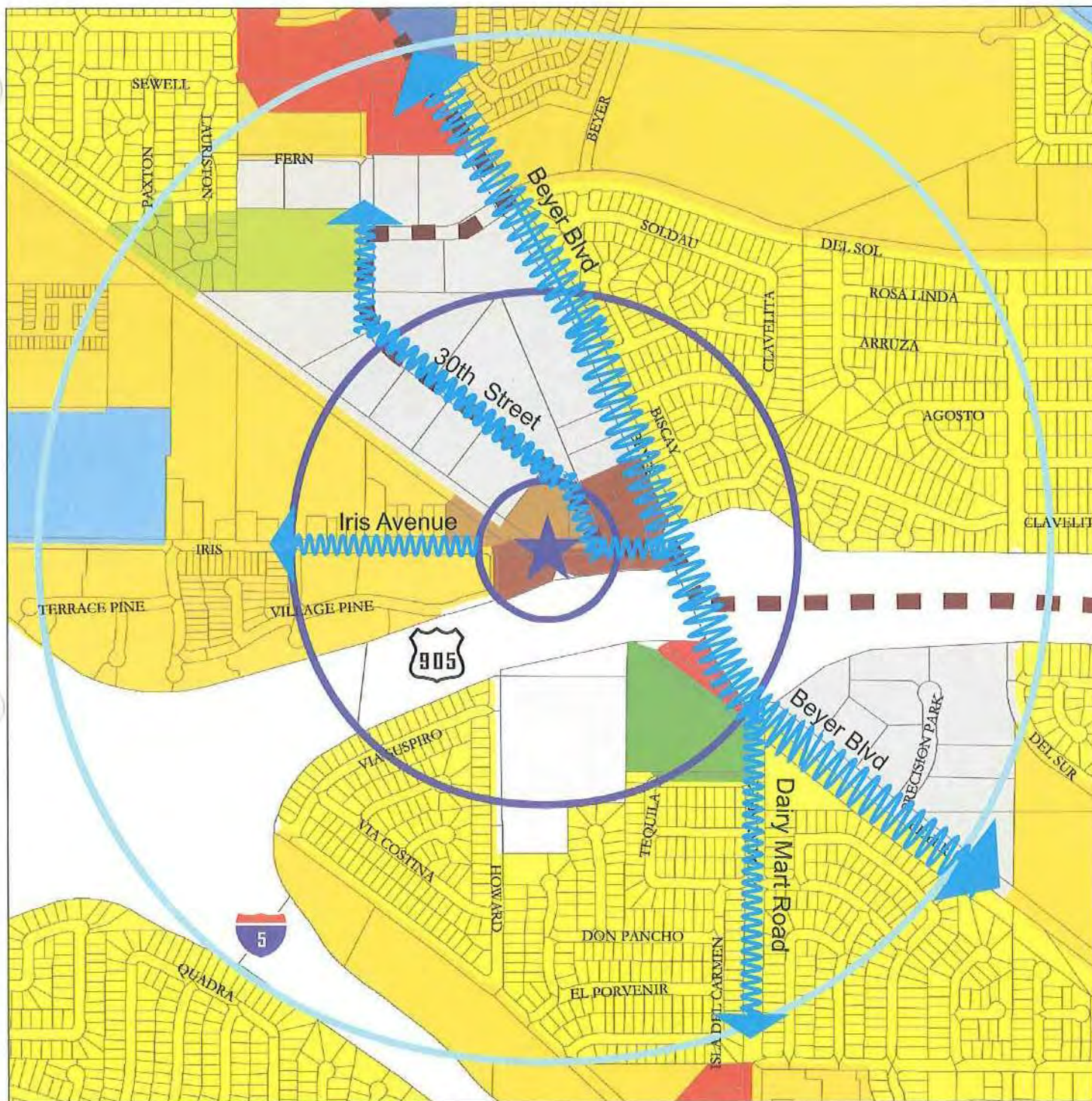
OPPORTUNITIES

## LAND USE LEGEND

- |                             |                                 |                               |
|-----------------------------|---------------------------------|-------------------------------|
| Car Station                 | Industrial Parks                | Vacant / Undeveloped          |
| Car Service                 | Warehousing / Public Storage    | Parks                         |
| 1/4 Mile Buffer             | Other Transportation / Freeways | Open Space Reserves/Preserves |
| 1/2 Mile Buffer             | Religious Facilities            | Other Public Services         |
| Spaced Rural Residential    | Retail and Strip Commercial     | Mixed Use                     |
| Single Family Residential   | Junior High Schools             | Other Recreation              |
| Multi Family Residential    | Other Schools                   |                               |
| Mobile Home Parks           | Elementary Schools              |                               |
| Junkyard/Dump/Landfill      | Fire Stations                   |                               |
| Rail Station/Transit Center | Libraries                       |                               |

**Figure 4.27**  
625 Alignment  
Iris Avenue Trolley Station





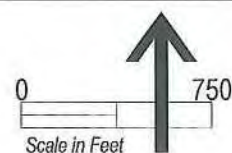
Station Location



625 Alignment



Pedestrian Access to Station



**Figure 4.28**  
**625 Alignment**  
**Iris Avenue Trolley Station**

## **F. Otay Mesa Road and Callente Avenue Station**

The Otay Mesa Road and Callente Avenue Station is located in an area that is currently undeveloped but is proposed for significant industrial use. Based on the priority treatments it is anticipated that there will be two curbside stations. One station will serve the west bound alignment and the other will serve the eastbound alignment. A far-side station located on the southeast side of Otay Mesa Road will serve the eastbound alignment. The westbound alignment will be served by a far-side station located on the northwest side of Otay Mesa Road, as illustrated in **Figure 4.29**.

### ▪ **Right-of-Way Requirements**

The right-of-way requirements or platform for curbside stations will be approximately 15-feet by 150-feet similar to those shown in **Figures 1.6** in *Chapter 1*. This accommodates a 15-foot boarding and alighting platforms on both sides of Otay Mesa Road. No additional right-of-way is anticipated, as most of the improvements will occur in the existing right-of-way or landscaped setbacks.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan illustrates few uses in close proximity to the station with the majority of the area identified as vacant or undeveloped, as shown in **Figure 4.30**. Currently the area is undeveloped with the exception of a new high school located south of Otay Mesa Road.

#### **Planned (2020)**

As shown in **Figure 4.30**, the proposed 2020 land use plan illustrates a significant change in land use intensity with the addition of:

- Commercial
- Industrial
- Residential
- Open Space

#### **Opportunities**

The increase in land uses illustrated in the 2020 Land Use Plan will support the proposed transit station. However, it may be appropriate to provide mixed-use opportunities to allow even more transit supportive uses and strengthen the "walk up" capability to the station. These future development opportunities should be built close to the street to allow integration of the station into the project design.

Mixed-use developments could be developed north of Otay Mesa road with residential being the dominant land use type with commercial being supportive or secondary.

On the south side of Otay Mesa Road the mixed use developments could be office oriented with commercial/retail uses providing supportive or secondary use as shown in **Figure 4.30**.

### ▪ **Access**

The existing and future street sidewalks will provide the primary pedestrian access to the station from the surrounding areas. Design improvements to the streetscape experience from the surrounding area should be implemented to enhance the pedestrian experience to the transit station.

Otay Mesa Road is designed as a 6-lane major arterial and will create a significant barrier for pedestrians trying to reach the stations. Creating a safe and convenient crossing at Otay Mesa Road and Caliente Avenue should be a priority at this station. This may include:

- Providing pedestrian "bulb-outs" at the intersection,
- Developing a pedestrian refuge island in the street median,
- Or building a pedestrian bridge if determined necessary to mitigate the traffic volume and width of Otay Mesa Road.

SR-905 also separates the community to the south of Caliente Station. A safe and pleasant pedestrian experience will be needed to overcome the freeway structure and to provide a strong pedestrian connection.

- In general it will be beneficial to improve the pedestrian access to the surrounding neighborhoods with a comprehensive streetscape enhancement program for all future streets. This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 4.31**: This program will be part of the overall station development plan and should specifically include Otay Mesa Road.

### ▪ **Otay Mesa Road and Caliente Avenue Station Issues**

For the proposed Otay Mesa Road and Caliente Avenue Station the following are possible issues affecting the implementation of station improvements.

#### ***Engineering Issues***

- No significant engineering issues are anticipated. If a pedestrian bridge is required for access to the surrounding land uses then additional right-of-way may be needed for the elevators and stairs necessary for this type of structure.

#### ***Environmental Issues***

- No significant environmental issues are anticipated. If the pedestrian bridge is required there may be visual issues that will need to be addressed.

#### ***Community Issues***

- No significant community issues are anticipated. The Otay Mesa Community Plan is being updated and the station here will not conflict with the recent draft plan.

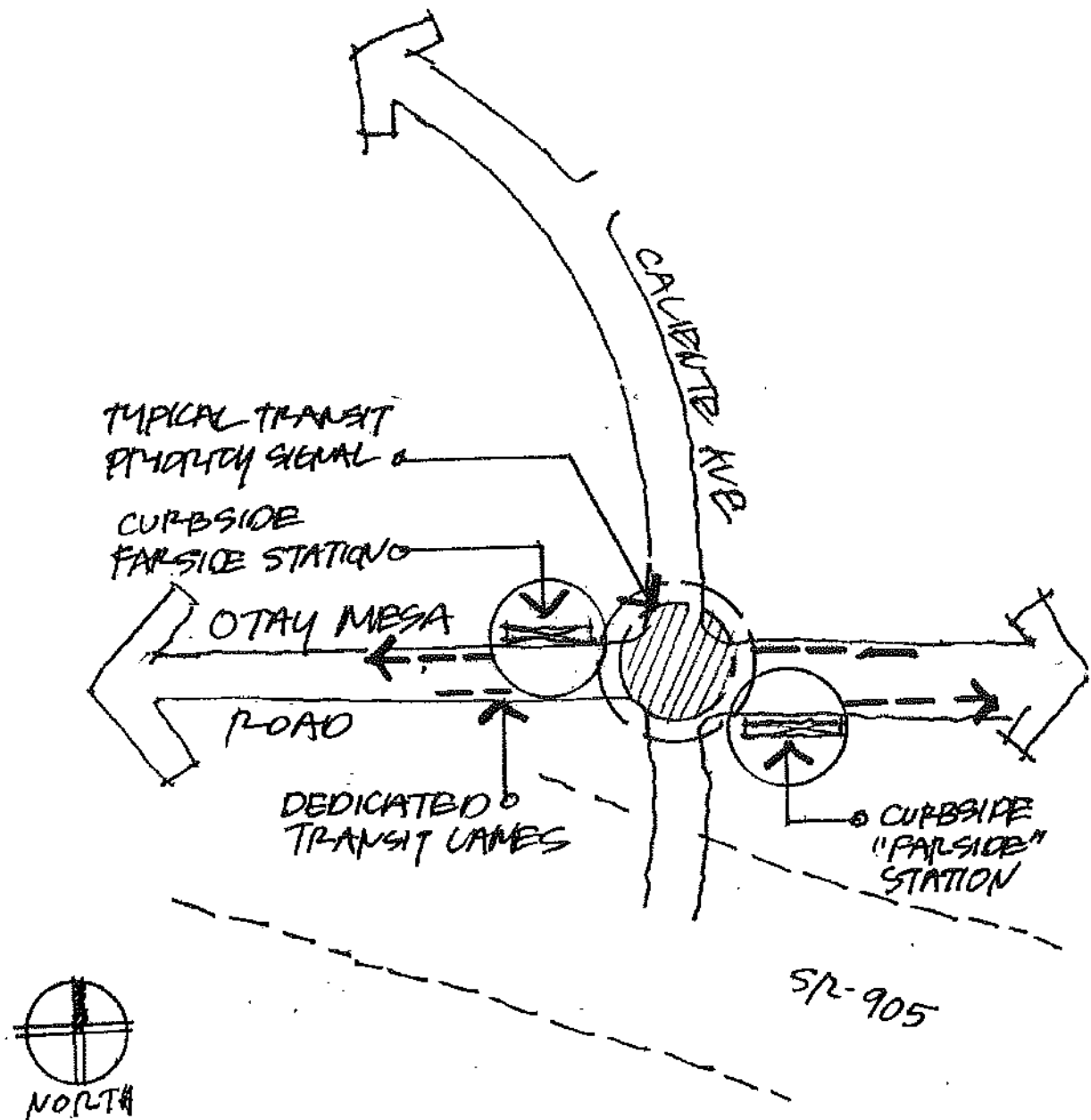


Figure 4.29:  
625- Otay Mesa Road and Caliente Avenue Station Location





EXISTING LAND USE



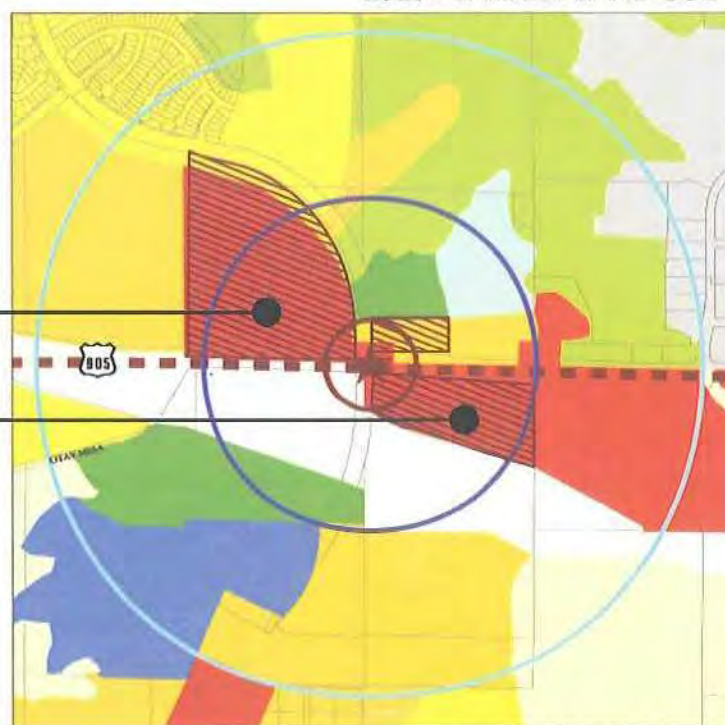
2020 PLANNED LAND USE

## Mixed Use Opportunities

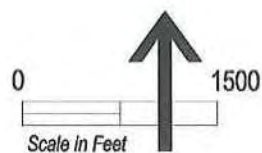
- Residential (Primary)
- Commercial (Secondary)

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

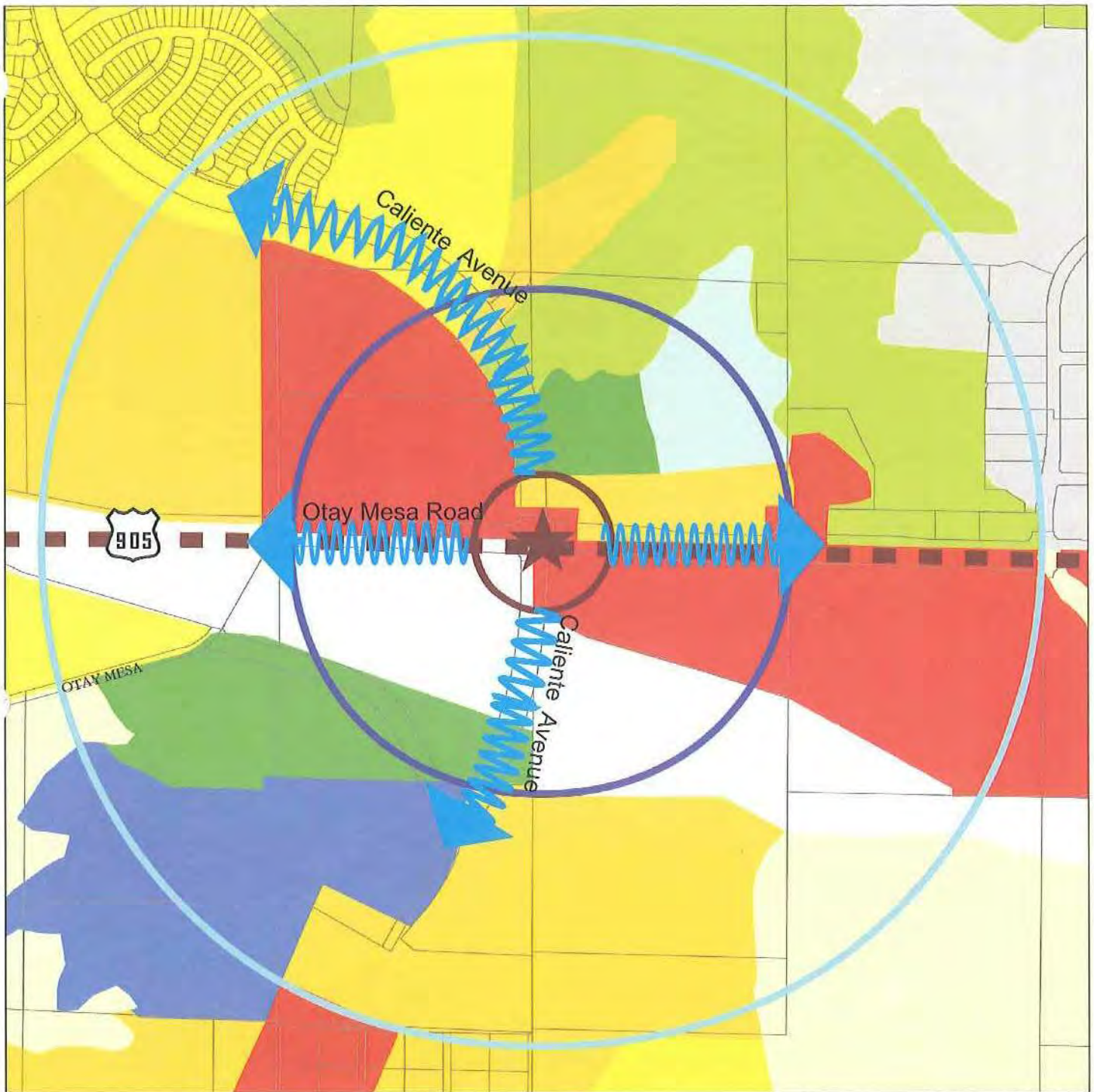


## LAND USE LEGEND

- |                               |                                        |
|-------------------------------|----------------------------------------|
| ⊛ Car Station                 | ■ Agriculture / Orchards and Vineyards |
| --- Car Service               | □ Elementary Schools                   |
| ■ 1/4 Mile Buffer             | ■ Senior High Schools                  |
| □ 1/2 Mile Buffer             | ■ Parks                                |
| □ Spaced Rural Residential    | ■ Open Space Reserves/Preserves        |
| ■ Single Family Residential   | □ Undeveloped                          |
| ■ Multi Family Residential    | □ Vacant / Undeveloped                 |
| ■ Light Industry              | ■ Junkyard/Dump/Landfill               |
| □ Freeways                    |                                        |
| ■ Retail and Strip Commercial |                                        |

**Figure 4.30**  
**625 Alignment**  
**Otay Mesa Road and Caliente Avenue Station**





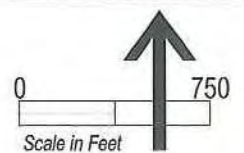
Station Location



625 Alignment



Pedestrian Access to Station



**Figure 4.31**  
**625 Alignment**  
**Otay Mesa Road and Caliente Avenue Station**

## **G. Otay Mesa Road and Cactus Road Station**

The Otay Mesa Road and Cactus Road Station is located in an area that is currently undeveloped but is proposed for significant industrial and office use. This station is also close to the entry of Brown Air Field. Based on the priority treatments it is anticipated that there will be two curbside stations. One station will serve the westbound alignment and the other station will serve the eastbound alignment. A far-side station that will be located on the southeast side of Otay Mesa Road will serve the eastbound alignment. A far-side station will also serve the westbound alignment and will be located on the northwest side of Otay Mesa Road, as shown in **Figure 4.32**.

### ▪ **Right-of-Way Requirements**

The right-of-way requirements for the curbside stations will be approximately 15-feet by 150-feet as shown in **Figures 1.6** in *Chapter 1*. This will accommodate 15-foot boarding and alighting platforms that will be located on both sides of Otay Mesa Road. It is anticipated that no additional right-of-way will be necessary, as most of the improvements will occur in the existing right-of-way or landscaped setbacks.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan illustrates commercial and general aviation uses, as shown in **Figure 4.33**. The majority of the area located on the south side of Otay Mesa Road is developed with light-industrial uses and numerous vacant or undeveloped parcels including agricultural uses. Brown Field is located on the north side of Otay Mesa Road.

#### **Planned (2020)**

The proposed 2020 land use plan illustrates a change in land use intensity with the addition of industrial parks south of Brown Field, as shown in **Figure 4.33**.

#### **Opportunities**

The land use changes illustrated in the 2020 Land Use Plan will help in supporting the proposed transit station. However, it may be appropriate to provide additional opportunities such as light-industrial or more intensive office uses. These uses should be located south of Otay Mesa Road and both east and west of the proposed station site, as shown in **Figure 4.33**. This will create an additional employment base and will provide transit supportive uses that will strengthen the "walk-up" capability of the station.

### ▪ **Access**

The existing and future street sidewalks will provide the primary pedestrian access from the surrounding area leading to Otay Mesa Road and to the station. Design improvements to the surrounding area's streetscape experience should be implemented to enhance the pedestrian experience to the transit station, as illustrated in **Figure 4.34**.

Otay Mesa Road is designed as a 6-lane major arterial and will create a significant barrier for pedestrians trying to reach the stations. Creating a safe and convenient

crossing at Otay Mesa Road and Cactus Road should be a priority at this station. This may include:

- Providing pedestrian "bulb-outs" at the intersection.
- Developing pedestrian refuge island in the street median.
- Or a building a pedestrian bridge, if determined necessary, to mitigate access due the volume and width of Otay Mesa Road.

In general it will be beneficial to improve the pedestrian access to the surrounding industrial neighborhoods with a comprehensive streetscape enhancement program for all future streets. This program will be part of the overall station development plan and should specifically include Otay Mesa Road.

▪ ***Otay Mesa Road and Cactus Road Station Issues***

For the proposed Otay Mesa Road and Cactus Road Station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- No significant engineering issues are anticipated. If a pedestrian bridge is required for access to the surrounding land uses then additional right-of-way may be needed for the elevators and stairs necessary for this type of structure.

***Environmental Issues***

- No significant environmental issues are anticipated. If the pedestrian bridge is required there may be visual issues that will need to be addressed.

***Community Issues***

- No significant community issues are anticipated. The Otay Mesa Community Plan is being updated and the station here will not conflict with the recent draft plan.



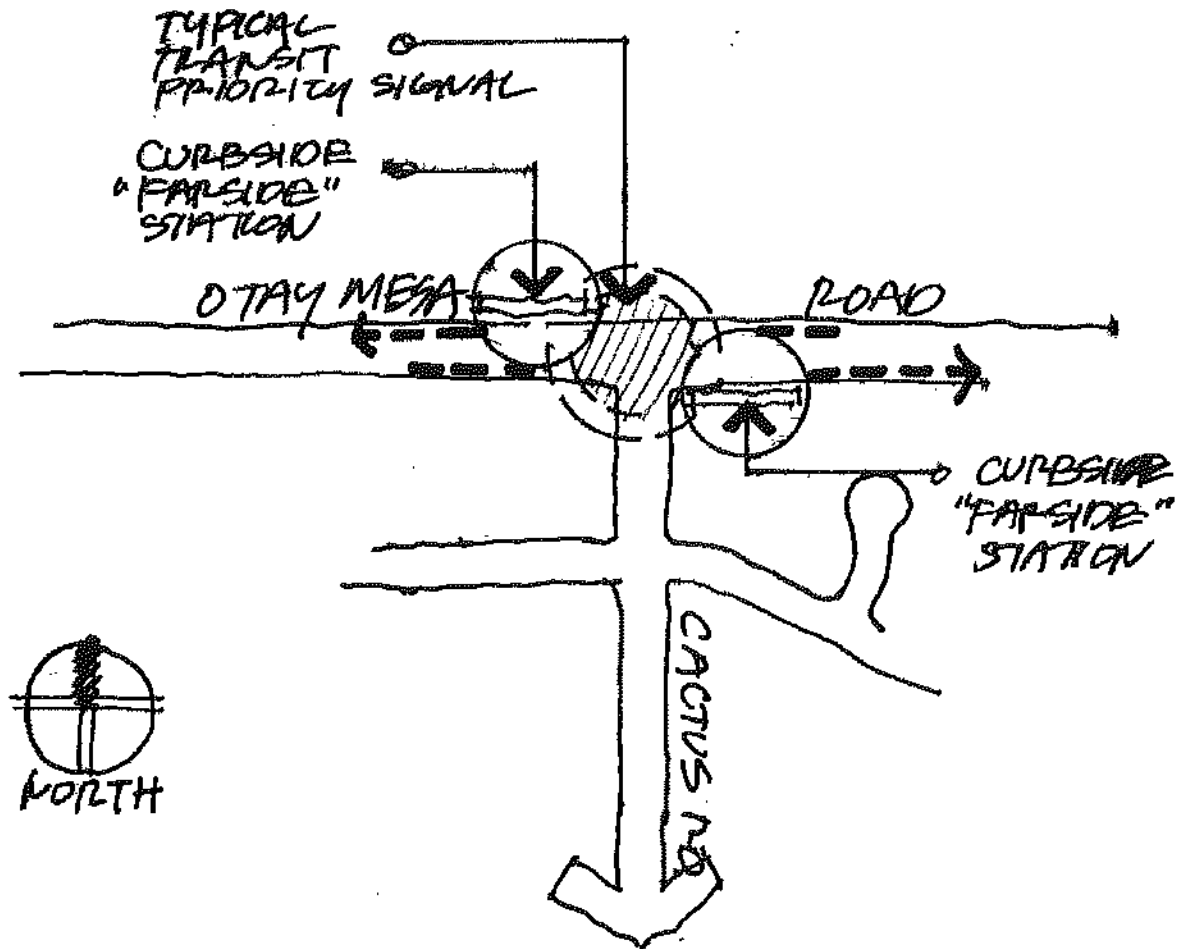


Figure 4.32:  
Otay Mesa Road and Cactus Road Station



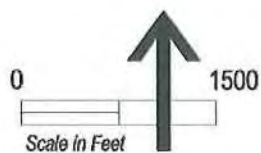
EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



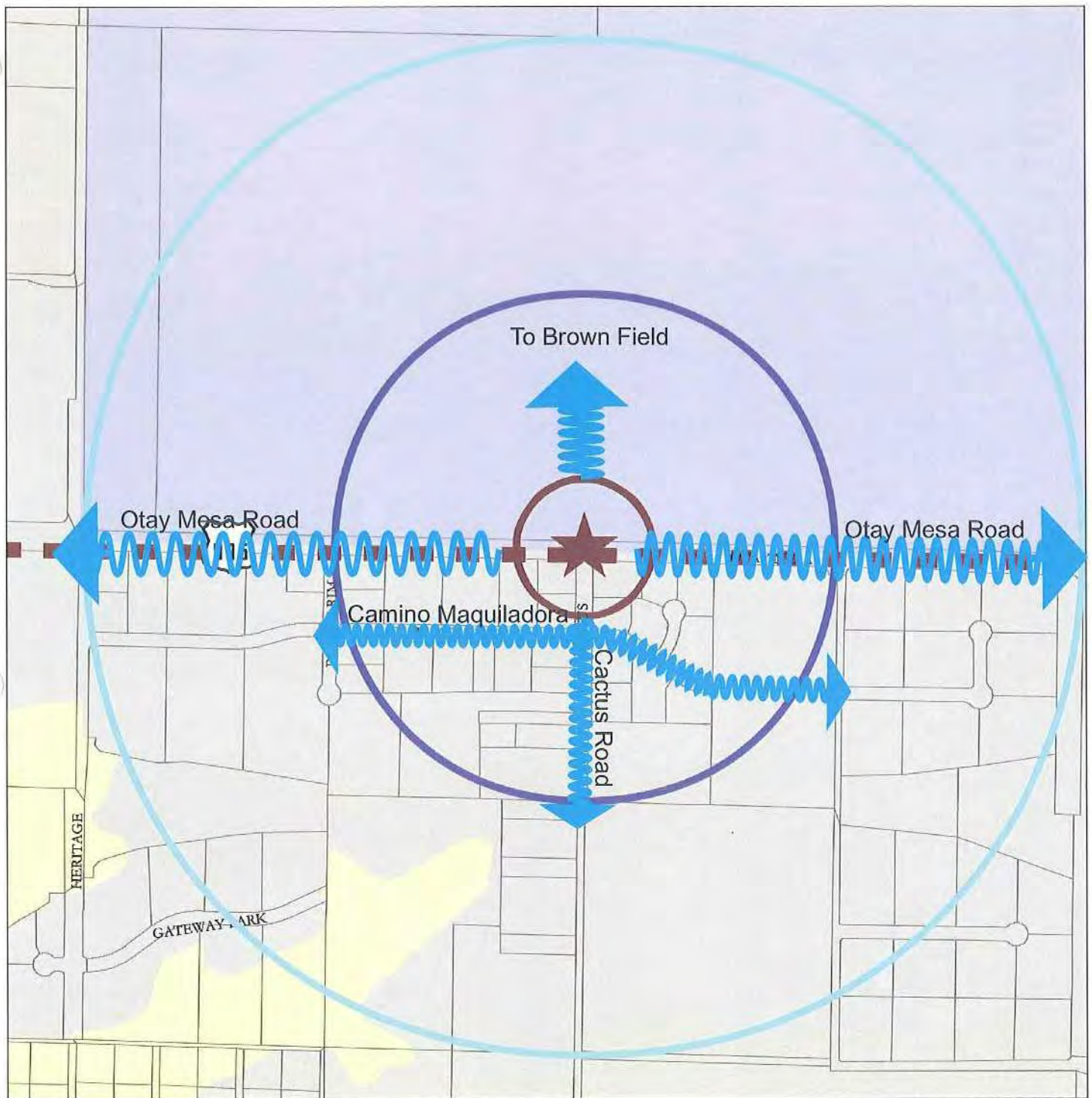
OPPORTUNITIES

### LAND USE LEGEND

- |                             |                                      |
|-----------------------------|--------------------------------------|
| (*) Car Station             | Industrial Parks                     |
| --- Car Service             | Agriculture / Orchards and Vineyards |
| 1/4 Mile Buffer             | Vacant / Undeveloped                 |
| 1/2 Mile Buffer             | Open Space Reserves/Preserves        |
| Spaced Rural Residential    | Warehouse / Public Storage           |
| Junkyard/Dump/Landfill      | Undeveloped                          |
| Office Lo-rise              |                                      |
| General Aviation Airports   |                                      |
| Communications / Utilities  |                                      |
| Retail and Strip Commercial |                                      |

**Figure 4.33**  
**625 Alignment**  
**Otay Mesa Road and Cactus Road Station**





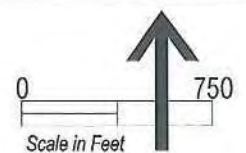
Station Location



625 Alignment



Pedestrian Access to Station



**Figure 4.34**  
**625 Alignment**  
**Otay Mesa Road and Cactus Avenue Station**

## **H. Otay Mesa Road and La Media Road Station**

The Otay Mesa Road and La Media Road Station is located at the eastern edge of Brown Field and is currently surrounded by a minimum of low intensive development. However, this area is proposed for significant industrial, commercial and office use. Based on the priority treatments it is anticipated that there will be two curbside stations. One station will serve the westbound alignment and the other station will serve the eastbound alignment. A far-side station that will be located on the southeast side of Otay Mesa Road will serve the eastbound alignment. A far-side station that will be located on the northwest side of Otay Mesa Road will serve the westbound alignment, as illustrated in **Figure 4.35**.

- **Right-of-Way Requirements**

The right-of-way requirements or platform for curbside stations will be approximately 15-feet by 150-feet as shown in **Figures 1.6** of *Chapter 1*. This will accommodate a 15-foot boarding and alighting platforms on both sides of Otay Mesa Road. It is anticipated that no additional right-of-way will be necessary, as most of the improvements will occur in the existing right-of-way and landscaped setbacks.

- **Land Use Integration**

**Existing (1999)**

The existing land use plan illustrates general aviation uses, industrial under construction, vacant and agricultural uses, as shown in **Figure 4.36**. The majority of the area located on the south side of Otay Mesa Road is developing with light-industrial uses with significant portions of the area vacant or undeveloped. Brown Field is located on the northwest side of Otay Mesa Road.

**Planned (2020)**

As illustrated in **Figure 4.36**, the proposed 2020 land use plan shows changes in land use intensity with the addition of commercial and industrial park uses located south of Otay Mesa Road and industrial parks located north of Otay Mesa Road.

**Opportunities**

The land use changes illustrated in the 2020 Land Use Plan will help in supporting the proposed transit station. However, it may be appropriate to provide higher density type developments such as light-industrial or office uses. These uses should be located north and the south of Otay Mesa Road and east and west of the proposed station site, as shown in **Figure 4.36**.

This will create additional transit supportive uses and will strengthen the "walk-up" capability of the station. These future development opportunities should be built close to the street integrating the station into the project's design.

- **Access**

The existing and future street sidewalks will provide the primary pedestrian access from the surrounding area to Otay Mesa Road and to the station, as illustrated in **Figure 4.37**. Design improvements to the surrounding area's streetscape experience should be implemented to enhance the pedestrian experience to the transit station.



Otay Mesa Road is designed as a 6-lane major arterial and will create a significant barrier for pedestrians trying to reach the stations. Creating a safe and convenient crossing at Otay Mesa Road and La Media Road should be a priority at this station. These improvements may include:

- Providing pedestrian “bulb-outs” at the major intersection.
- Developing pedestrian refuge island in the street median.
- Or building a pedestrian bridge, if determined necessary, to mitigate access due to the volume and width of Otay Mesa Road.

In general it will be beneficial to improve the pedestrian access to the surrounding industrial and commercial neighborhoods with a comprehensive streetscape enhancement program for all future streets. This program will be part of the overall station development plan and should specifically include Otay Mesa Road.

#### ■ ***Otay Mesa Road and La Media Road Station Issues***

For the proposed Otay Mesa Road and La Media Road the following are possible issues affecting the implementation of station improvements.

##### ***Engineering Issues***

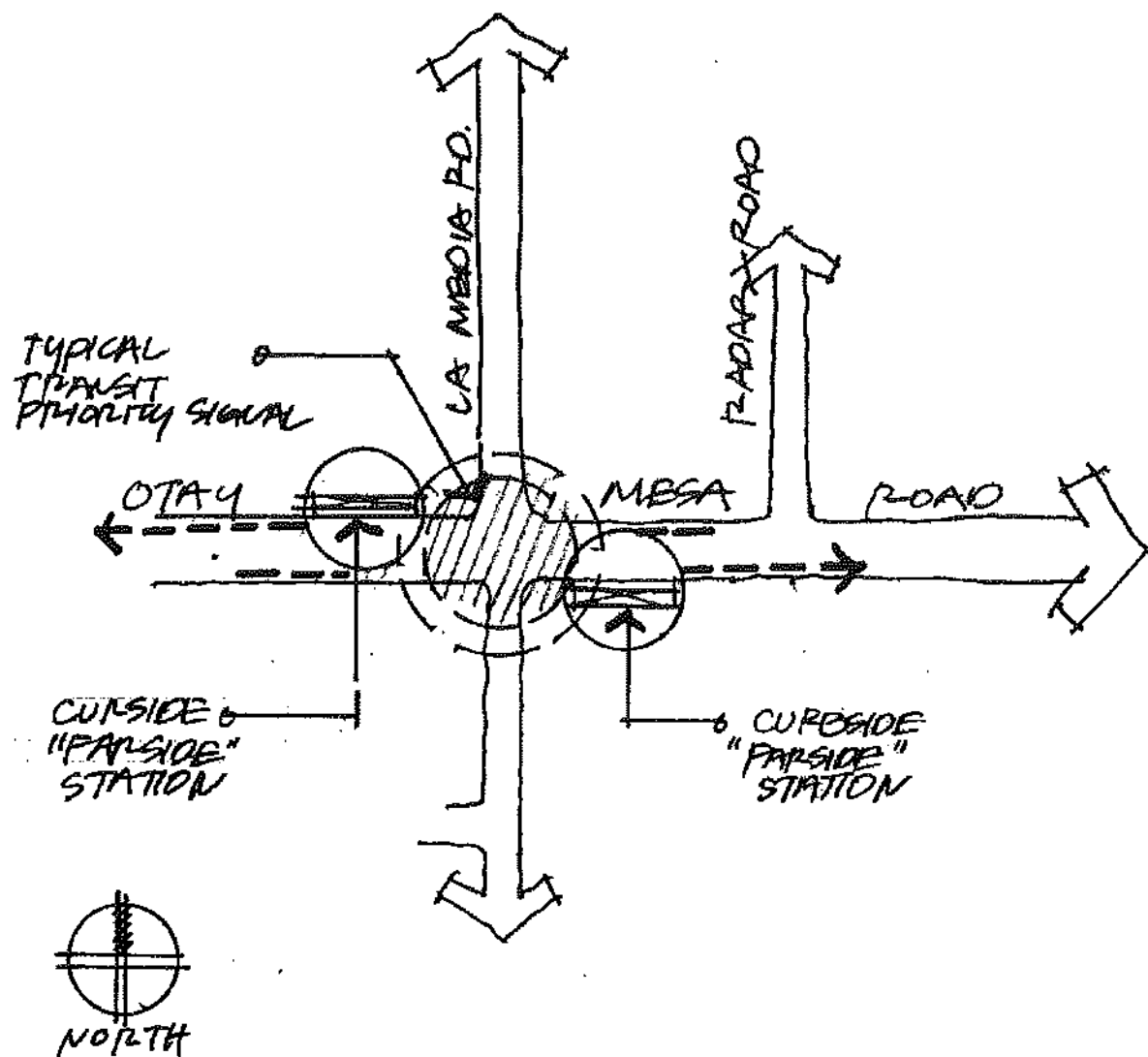
- No significant engineering issues are anticipated. If a pedestrian bridge is required for access to the surrounding land uses then additional right-of-way may be needed for the elevators and stairs necessary for this type of structure.

##### ***Environmental Issues***

- No significant environmental issues are anticipated. If the pedestrian bridge is required there may be visual issues that will need to be addressed.

##### ***Community Issues***

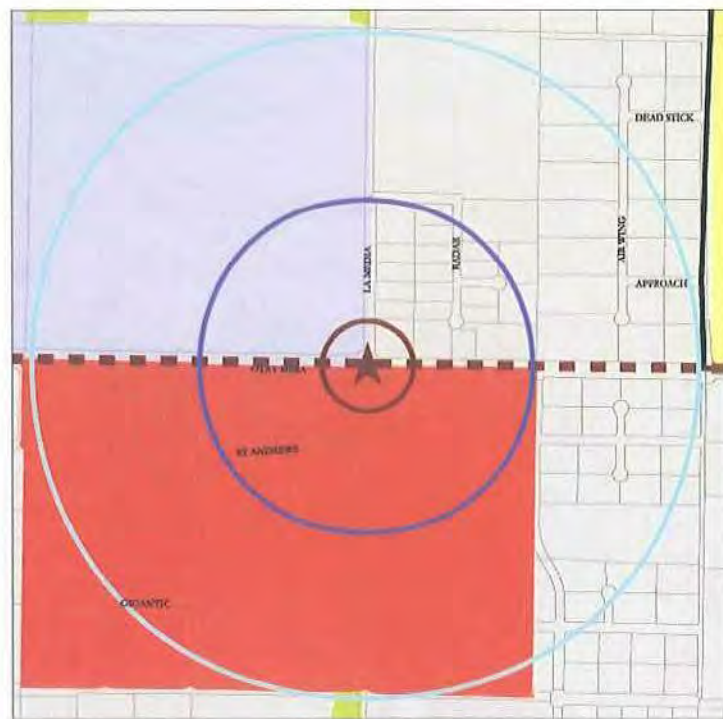
- No significant community issues are anticipated. The Otay Mesa Community Plan is being updated and the station here will not conflict with the recent draft plan.



**Otay Mesa Road and La Media Road Station Location** *Figure 4.35*



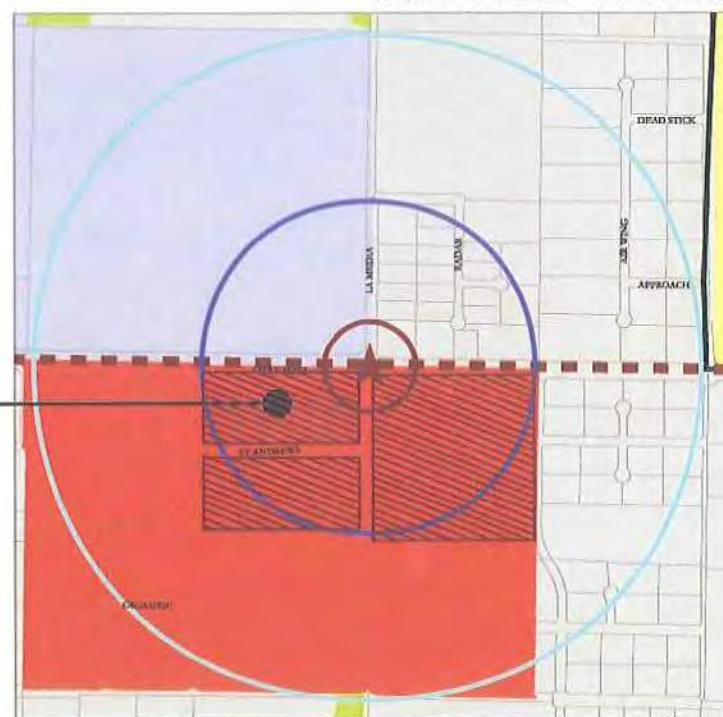
EXISTING LAND USE



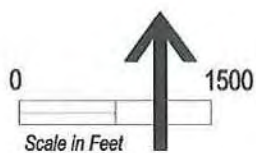
2020 PLANNED LAND USE

Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

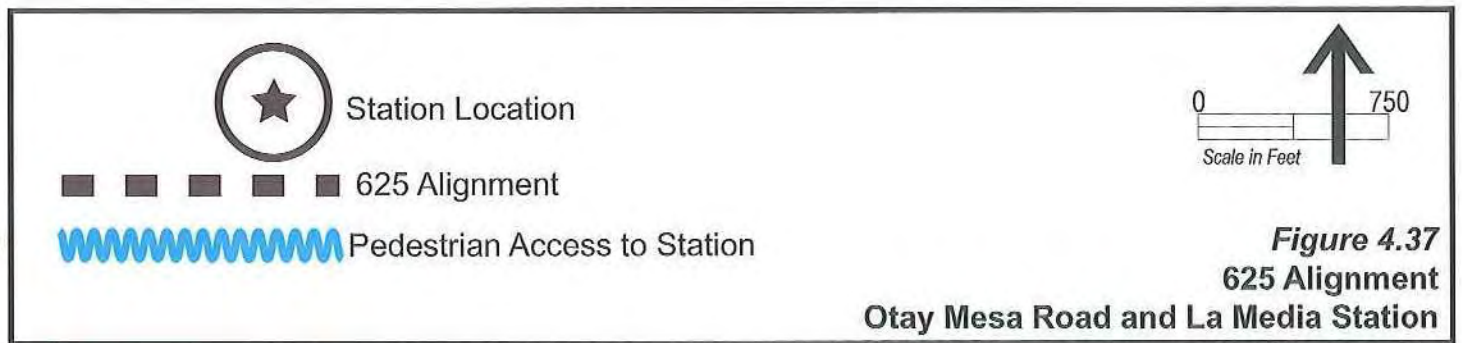
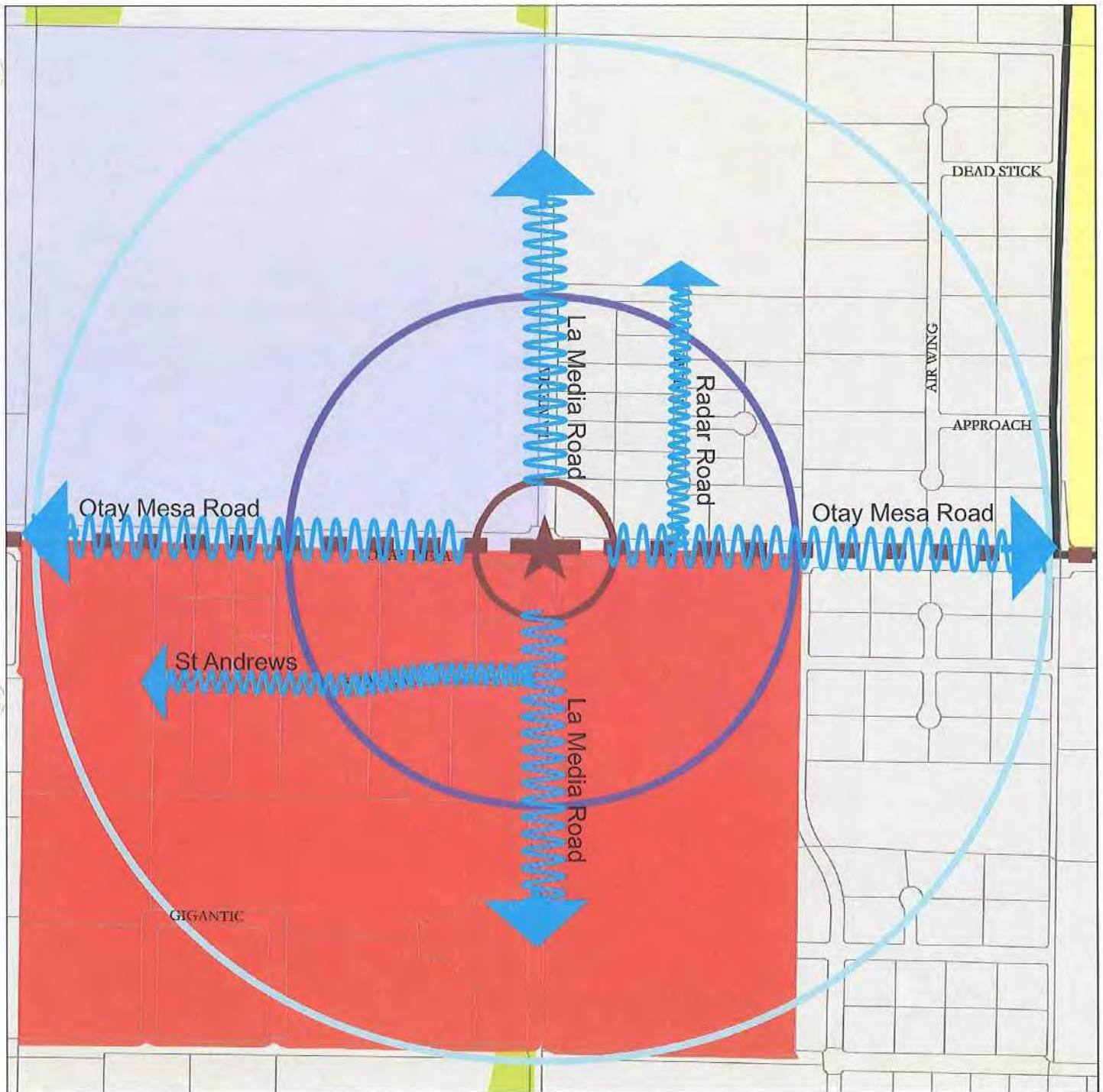


### LAND USE LEGEND

- |                                      |                               |
|--------------------------------------|-------------------------------|
| Car Station                          | Specific Plan Area            |
| Car Service                          | Undeveloped                   |
| 1/4 Mile Buffer                      | Industrial Under Construction |
| 1/2 Mile Buffer                      |                               |
| General Aviation Airports            |                               |
| Retail and Strip Commercial          |                               |
| Industrial Parks                     |                               |
| Agriculture / Orchards and Vineyards |                               |
| Vacant / Undeveloped                 |                               |
| Open Space Reserves/Preserves        |                               |

**Figure 4.36**  
**625 Alignment**  
**Otay Mesa Road and La Media Station**







## **I. Otay Mesa Road and Harvest Station**

The Otay Mesa Road and Harvest Station should be located to serve both the 625 and the 694 alignments allowing for easy transfer opportunities. In order for these alignments to share "one" facility the station must be located south of SR-125 on SR-905, as illustrated in **Figure 4.38**. Based on the priority treatments and the roadway design a curbside "pull out" station type will be necessary.

### ▪ **Right-of-Way Requirements**

The Otay Mesa Road and Harvest station will require two (2) curbside stations, one for each direction, which will pull out from the proposed travel lanes. The station will be located outside of the existing street right-of-way and will require acquisition of additional property. The general area will require approximately 175-feet x 50-feet in dedicated land for transit use for each station, as illustrated in **Figure 4.39**.

The transit lane at the station will also have to transition back into the proposed travel lanes. The length of this transition could be as long as 1,000 feet in each direction. The final station locations and design will have to take into account the other northbound and southbound travel lanes since these stations will be located near the SR-125 and SR-905 on/off ramps.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan illustrates agricultural and vacant uses with a small area identified for industrial uses as shown in **Figure 4.39**. Currently there is significant industrial/warehouse type development occurring in the area. It is anticipated that this type of land use intensity will continue into the near future.

#### **Planned (2020)**

As illustrated in **Figure 4.39**, the proposed 2020 land use plan shows changes in land use intensity with the addition of industrial park uses located south of Otay Mesa Road and a specific planning area located north of Otay Mesa Road. As previously mentioned this type of development is already occurring.

#### **Opportunities**

The land use changes illustrated in the 2020 Land Use Plan will help support the proposed transit station. However, it may be appropriate to provide higher density type developments such as light industrial or office uses closer to the stations. These uses should be located east and west of SR-905 and the proposed station site, as shown in **Figure 4.40**.

This will create additional transit supportive uses and will strengthen the "walk up" capability of the station. These future development opportunities should be located in close proximity to the stations allowing for the potential integration of the station into the project design.

### ▪ **Access**

This area has the potential to become extremely pedestrian “unfriendly.” With the transition of SR-905, SR-125 and Otay Mesa Road all occurring in this location it’s important that pedestrian access not be “cut-off” from the surrounding development areas. This station will rely primarily on walk-up transit patrons so it’s important that direct and easy access is provided for each of the station locations

The primary pedestrian access will be provided from the future streets associated with new growth and development. The sidewalks associated with these streets must lead and provide pedestrian and vehicular access to the proposed stations. Design improvements to the surrounding area’s entire streetscape experience should be implemented to enhance the pedestrian access to the transit station, as shown in **Figure 4.41.**

SR-905 is designed as a major freeway and will create a significant barrier for pedestrians crossing the freeway to reach the stations. Creating a safe and convenient crossing at the stations located on SR-905 will require a pedestrian bridge over SR-905 linking the two curbside stations together as well as the adjacent development areas.

In general it will be beneficial to improve the future pedestrian access to the surrounding industrial neighborhoods with a comprehensive streetscape enhancement program for all future streets. This program will be part of the overall station development plan and should specifically include any streets that are being proposed in the Otay Mesa Industrial Park.

### ▪ **Otay Mesa Road and Harvest Road Station Issues**

For the proposed Otay Mesa Road and Harvest Road Station the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- A pedestrian bridge is required for access to the surrounding land uses and additional right-of-way will be needed for the elevators and stairs necessary for this type of structure.
- Additional right-of-way will be required for the transit station and station ingress and egress lanes from SR-905.
- Carefully consideration should be given to the placement of the station to ensure that the access lanes do not conflict with the on-off ramps for SR-125 and SR-905.

#### **Environmental Issues**

- No significant environmental issues are anticipated. If the pedestrian bridge is provided there may be visual issues that will need to be addressed.

#### **Community Issues**

- Acquisitions of additional rights-of-way from adjacent private land owners for station and station access may become an issue. Efforts should begin to discuss the requirements and needs as SR-905 is being planned.

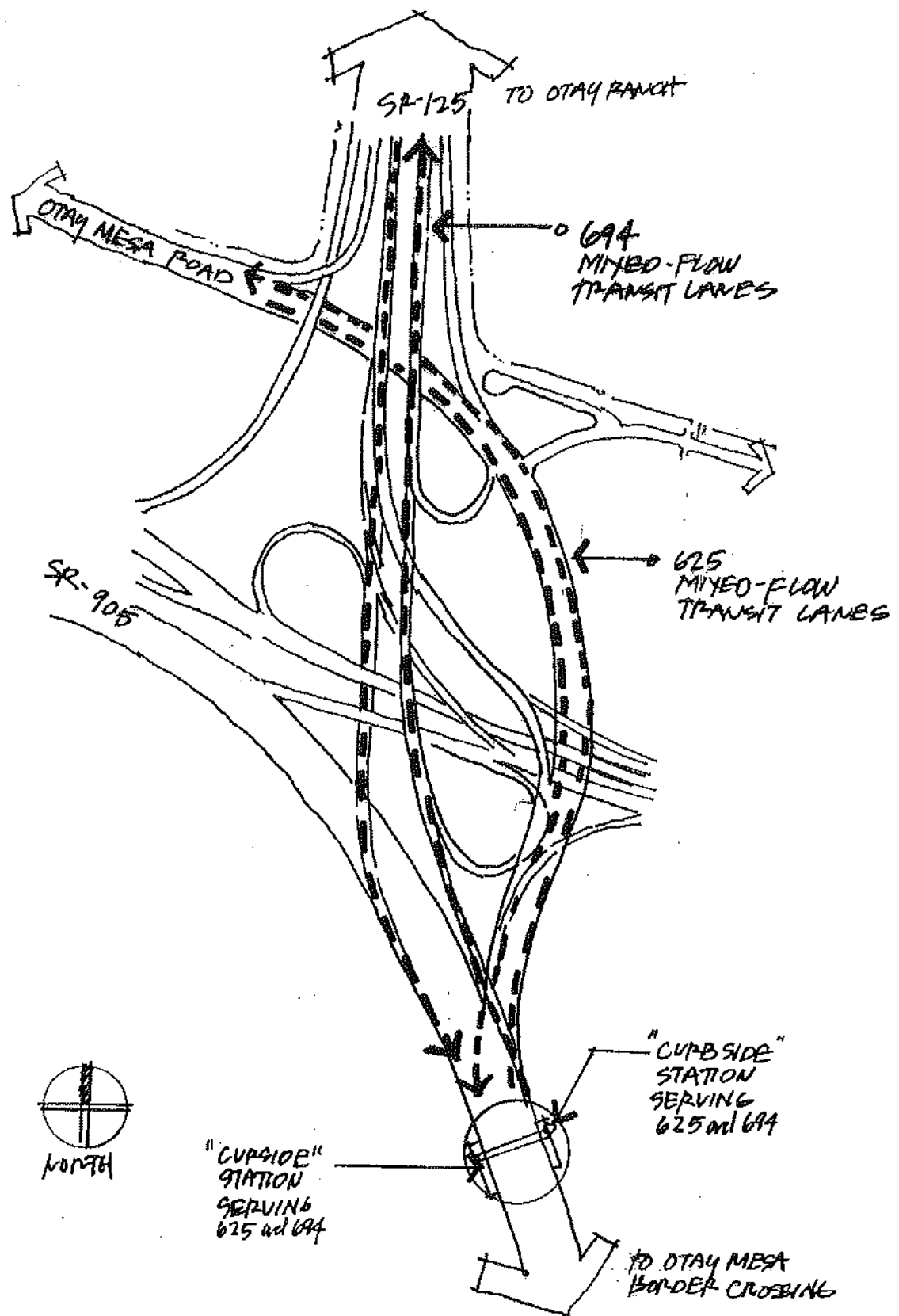


Figure 4.38  
Otay Mesa Road - Harvest Station Location

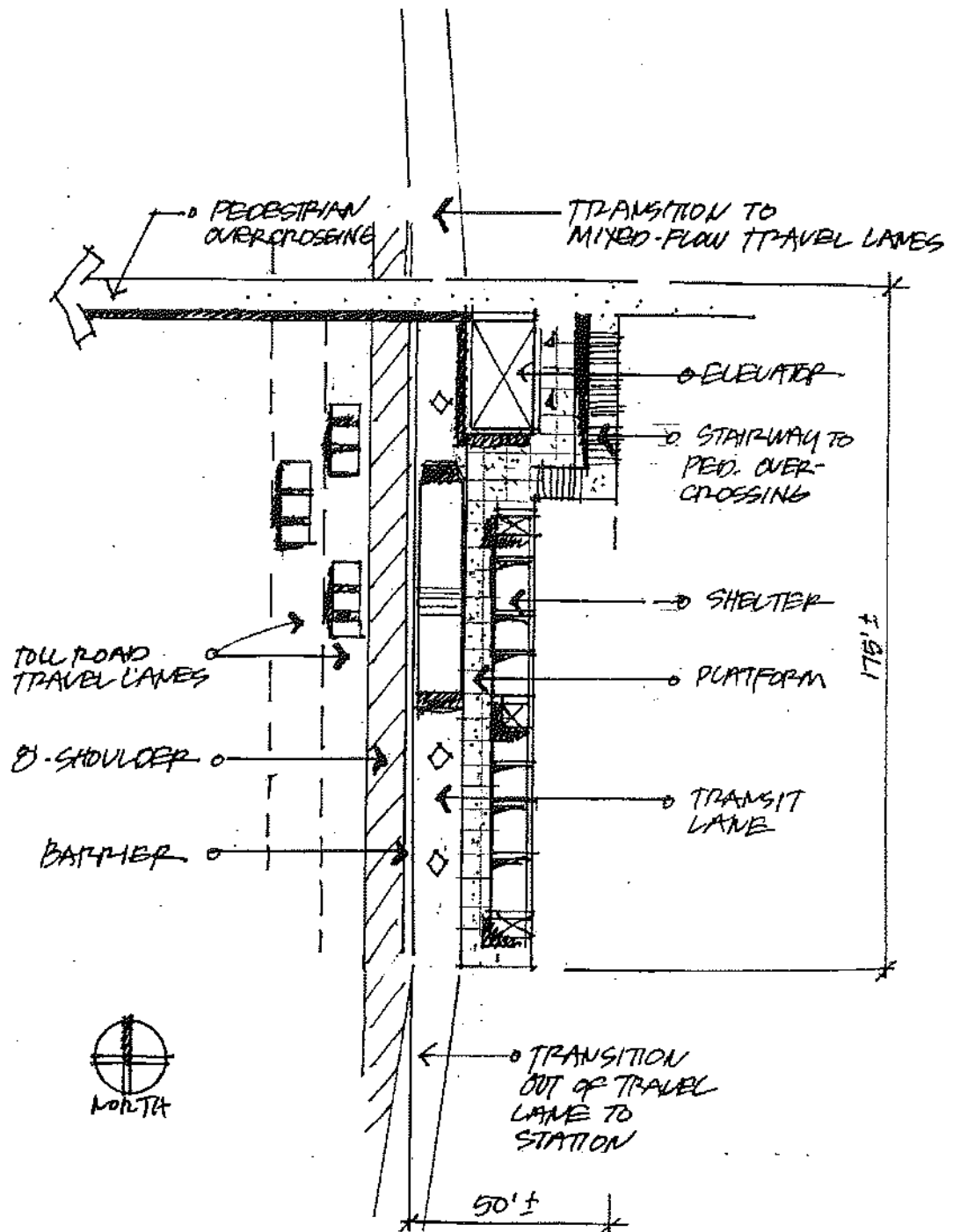


Figure 4.39  
Otay Mesa Boulevard - Harvest Station Type





EXISTING LAND USE



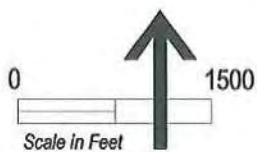
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

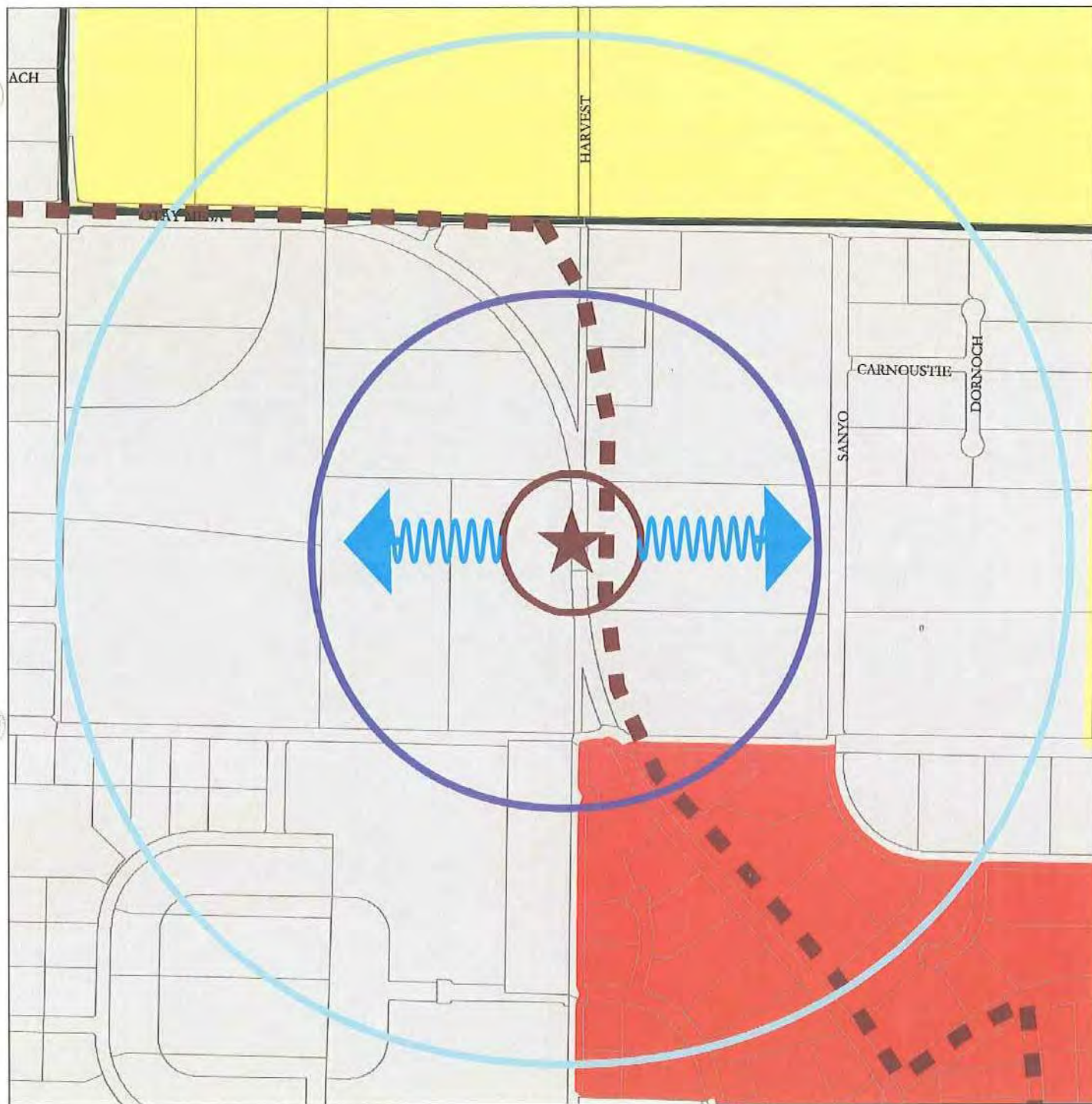


## LAND USE LEGEND

- |                                      |                            |
|--------------------------------------|----------------------------|
| Car Station                          | Undeveloped                |
| Car Service                          | Communications / Utilities |
| 1/4 Mile Buffer                      |                            |
| 1/2 Mile Buffer                      |                            |
| Retail and Strip Commercial          |                            |
| Industrial Parks                     |                            |
| Agriculture / Orchards and Vineyards |                            |
| Vacant / Undeveloped                 |                            |
| Open Space Reserves/Preserves        |                            |
| Specific Plan Area                   |                            |

**Figure 4.40**  
**625 Alignment**  
**Otay Mesa Road and Harvest Station**



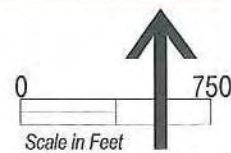


Station Location

625 Alignment



Pedestrian Access to Station



**Figure 4.41**  
**625 Alignment**  
**Otay Mesa Road and Harvest Road Station**

## **J. Otay Mesa Border Crossing Station**

The Otay Mesa Border Crossing Station is recommended to be located near the southerly end of Roll Drive. This recommendation is based on several factors: the ability to accommodate the necessary right-of-way for station improvements; the station's ability to serve numerous transit routes and provide transfer capabilities; and a location close enough to the border to allow for pedestrians to reach the station.

In addition to serving the 625 alignment, the Otay Mesa Border Crossing Station will serve the Tier One 694 route and the Blue Car 905 route. Based on the service these additional alignments will require, accommodations should be considered to address the "turn-around" need for all transit vehicles. The station is not considered for a park and ride type facility and will instead focus on transfer capabilities and high pedestrian activity.

The station will be located close to the area's employment centers and near the border crossing. Although this border crossing is not as heavily used by pedestrians as the San Ysidro crossing, future pedestrian activity is expected to increase.

### ▪ **Right-of-Way Requirements**

The Otay Mesa Border Crossing Station will be considered a major hub and transfer station. The station will require multiple platforms for the different alignments proposed to serve this area. It is anticipated that approximately 1.5 to 2.0 acres will be needed to accommodate the station requirements. The station will be located outside of the existing street right-of-way on property dedicated for use as a transit center, as illustrated in **Figure 4.42**. Currently there are a number of vacant parcels in the general area of Roll Drive that will be suitable for use as a station.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan illustrates warehousing, commercial, industrial and government uses as shown in **Figure 4.43**.

#### **Planned (2020)**

The proposed 2020 land use plan illustrates changes in land use intensity with the addition of significant commercial uses located within  $\frac{1}{4}$  to  $\frac{1}{2}$  mile of the border, as shown in **Figure 4.43**. Other uses being proposed for 2020 include commercial as a dominant use with industrial parks as a secondary use.

#### **Opportunities**

The land use changes illustrated in the 2020 Land Use Plan will help support the proposed transit station. However, it may be appropriate to provide higher density mixed-use type developments incorporating both commercial and office uses closer to the stations. The mixed-use areas will be located in close proximity of the proposed station site as shown in **Figure 4.43**. This will create additional transit supportive uses and will strengthen the "walk up" capability of the station. Residential uses will not be appropriate in this location and is not recommended as part of the mixed-use component.

### ▪ **Access**

Due to the area's proximity to the border it is extremely congested with truck and other vehicle traffic. Pedestrians typically mix with the local traffic. They also use the local streets and sidewalks when accessing or leaving the border.

Safe and direct pedestrian access should be a major consideration as the border crossing transit station is designed. In general it will be beneficial to improve future pedestrian access to the surrounding industrial/commercial neighborhoods and the border crossing with a comprehensive streetscape enhancement program for all streets in the general area as illustrated in **Figure 4.44**. This program will be part of the overall station development plan and should include the following streets:

- SR-905 Otay Mesa Road
- Siempre Viva Road
- Via de la Amistad
- Marconi Drive

### ▪ **Otay Mesa Border Crossing Station Issues**

For the proposed Otay Mesa Border Crossing Station the following are possible issues affecting the implementation of station improvements.

#### **Engineering and Right-of-way Issues**

- Purchase of private property for the off-site station will be required. This acquisition should be initiated as soon as possible to assure that the property is available for the station to be implemented. Acquisition is important as other alignments and transit services will also be using this facility.
- The station will need to accommodate turn-around movement by the transit vehicle for both Red Car and Blue Car services as this is a terminus and origination station.

#### **Environmental Issues**

- A traffic report may be required to determine possible impacts to local traffic by transit vehicles using the local streets.
- Land use issues may arise by removing the existing commercial land uses and replacing it with transportation uses for an off-street transit station.

#### **Community Issues**

- At this time no significant community issues are anticipated at this station location. There may be concerns by the surrounding businesses on the impact that the transit service will have on local traffic and on their businesses.



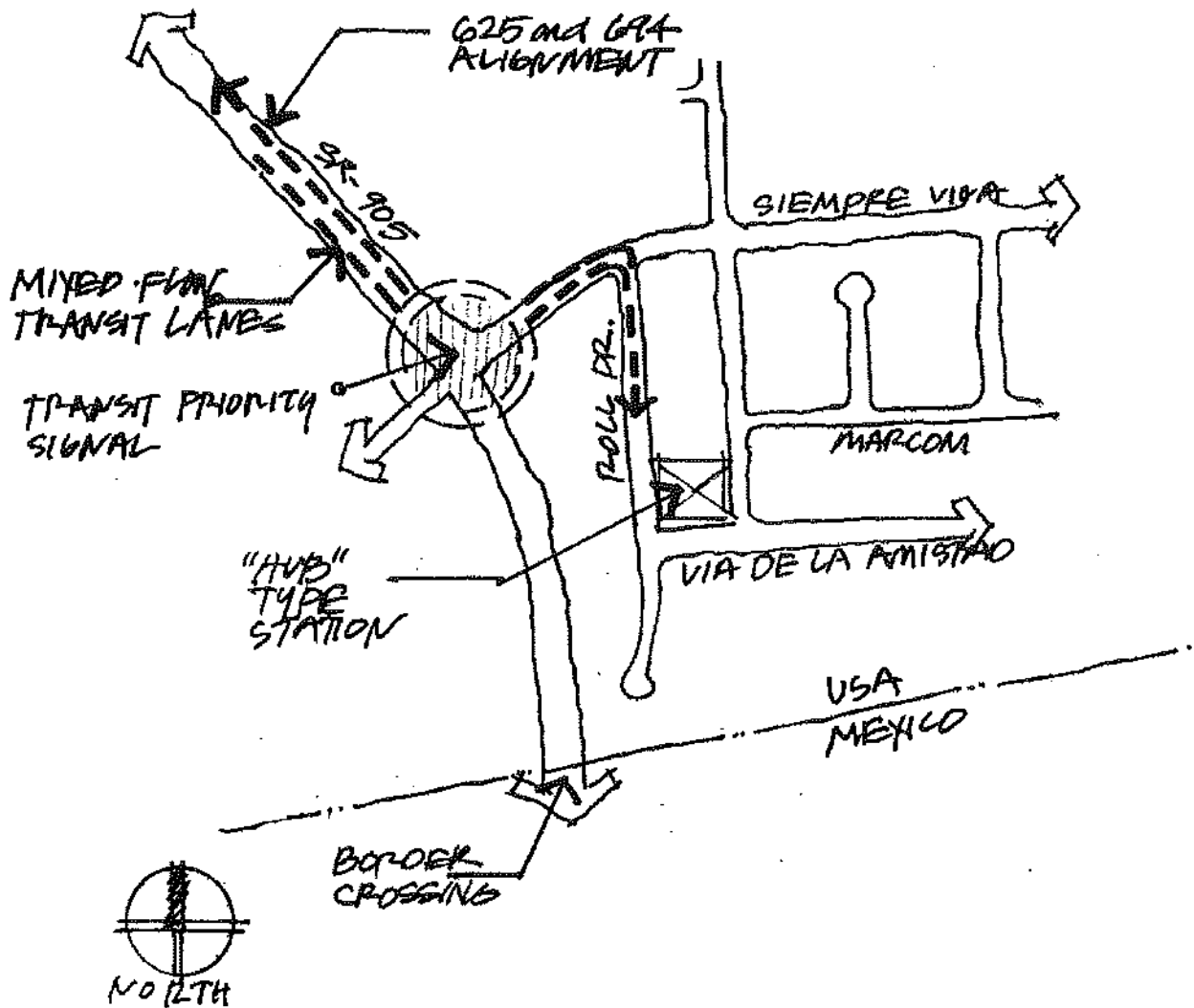


Figure 4.42  
Otay Mesa Border Crossing Station Location



EXISTING LAND USE



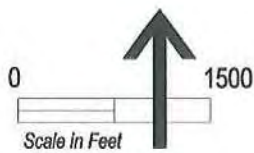
2020 PLANNED LAND USE

### Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



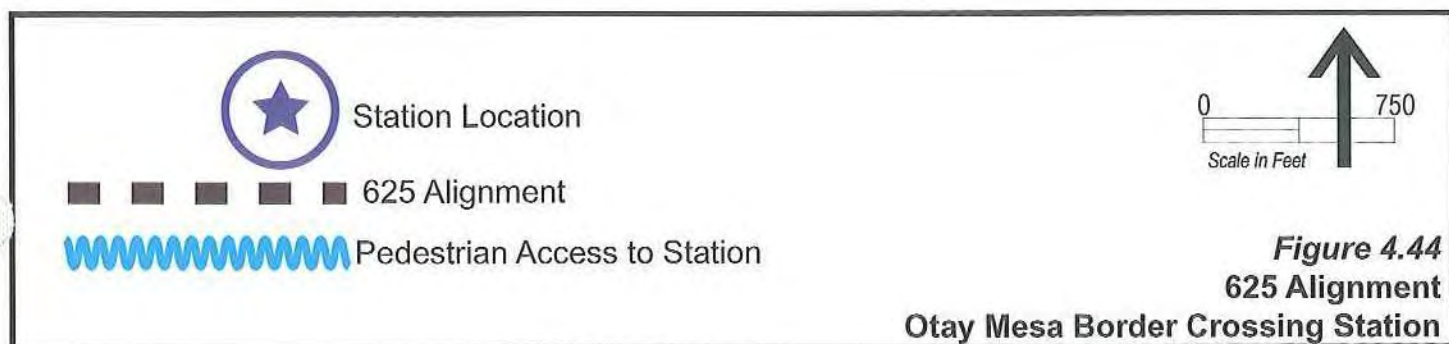
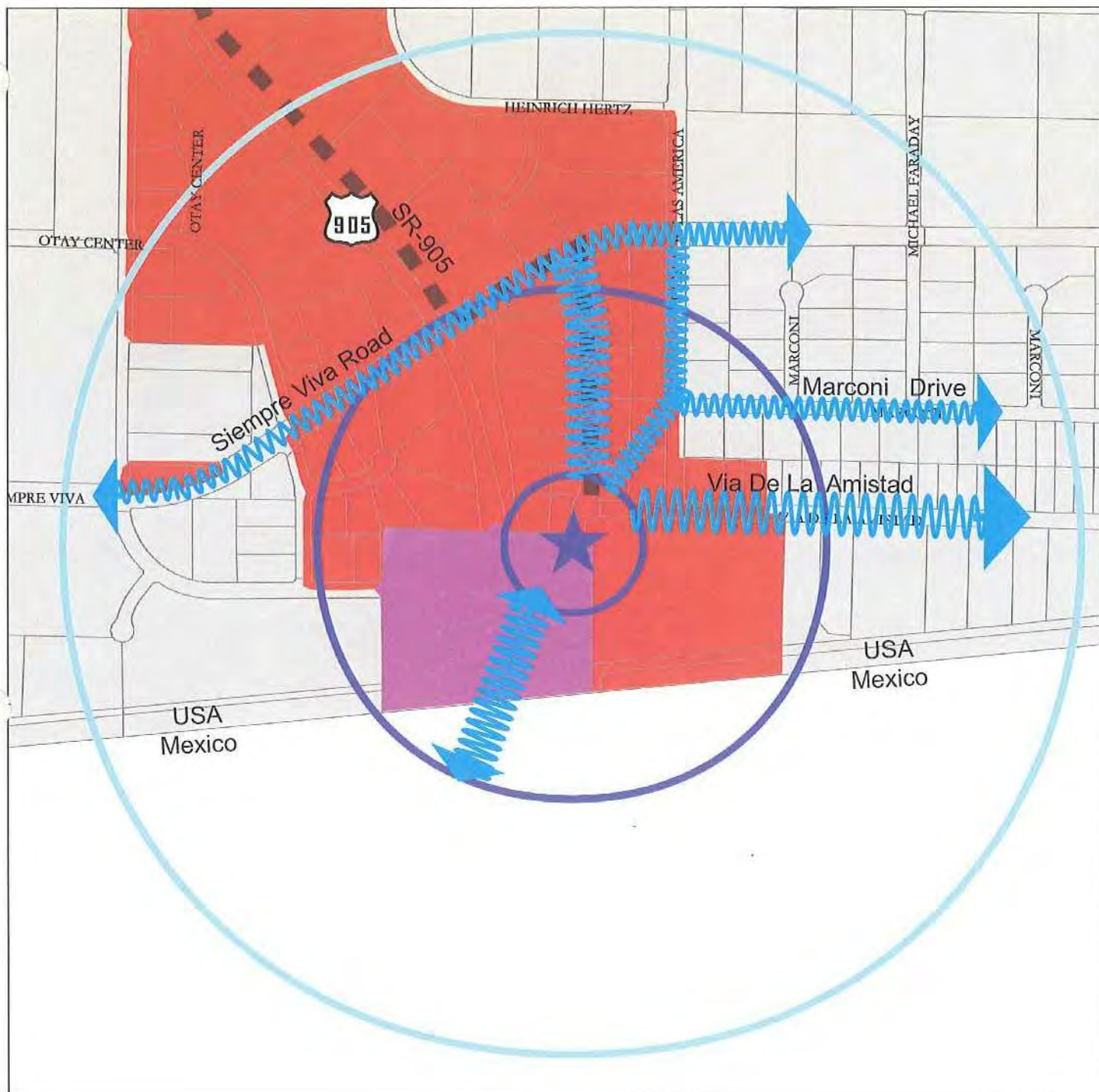
OPPORTUNITIES



### LAND USE LEGEND

- |                                           |                                 |
|-------------------------------------------|---------------------------------|
| ★ Car Station                             | Yellow box Vacant / Undeveloped |
| --- Car Service                           | White box Undeveloped           |
| Blue circle 1/4 Mile Buffer               |                                 |
| Light blue circle 1/2 Mile Buffer         |                                 |
| Grey box Industrial Parks                 |                                 |
| White box Warehousing / Public Storage    |                                 |
| White box Other Transportation / Freeways |                                 |
| Purple box Gov't Office / Civic Center    |                                 |
| Red box Retail and Strip Commercial       |                                 |
| Blue box Other Schools                    |                                 |

**Figure 4.43**  
**625 Alignment**  
**Otay Mesa Border Crossing Station**





## Chapter 5 - 627 Alignment

### 5.1 SUMMARY OVERVIEW AND CONCLUSIONS

The following section provides an overview of the general route alignment, station types, and priority treatments for the 627 alignment. Additional project analysis and more detailed information pertaining to the alignment designs are provided in the sections following this summary.

#### A. 627 Alignment – H Street Trolley Station to Eastern Urban Center Station

The 627 alignment begins at the H Street Trolley Station and travels through the older communities of central Chula Vista to the newer communities located east of Interstate 805 (I-805) to the Eastern Urban Center Station (EUC) in Otay Ranch Village 12. A significant portion of this alignment has already been studied as one of MTDB's Showcase Projects. A copy of the "South Bay Showcase Project Central Chula Vista – Otay Ranch" is provided in the appendix. The portion of the 627 alignment that is a part of this effort and not a part of the Showcase study alignment is illustrated in **Figure 5.1**. This "remainder" segment of the alignment being studied in this report will be southeast of East Palomar Street and La Media Road.

For this report the 627 alignment description begins at the intersection of La Media Road and East Palomar Street. The route from East Palomar Street would continue south to on La Media Road to Village 2 in Otay Ranch and then turn east on Birch Road. The alignment continues east on Birch Road between Village 6 and 7 and over State Route 125 (SR-125). As the alignment reaches the "Spine Road" the route turns south to its destination/terminus at the Eastern Urban Center Station. This portion of the route is approximately 3-miles in length.

#### B. Alignment Station Types

Based on the field research and project analysis there are 2 stations identified for the 627 route and illustrated in **Figure 5.1**. The type of transit station associated with each location is summarized in **Table 5.1**. Future discussion for each station is provided in *Section 5.3: Station Location and Types*.

#### C. Priority Treatment Conclusions

The priority treatment recommended for the 627 are summarized and illustrated in **Figure 5.2**. These recommendations are based primarily on the corridor's traffic congestion and physical constraints and their feasibility for implementation.

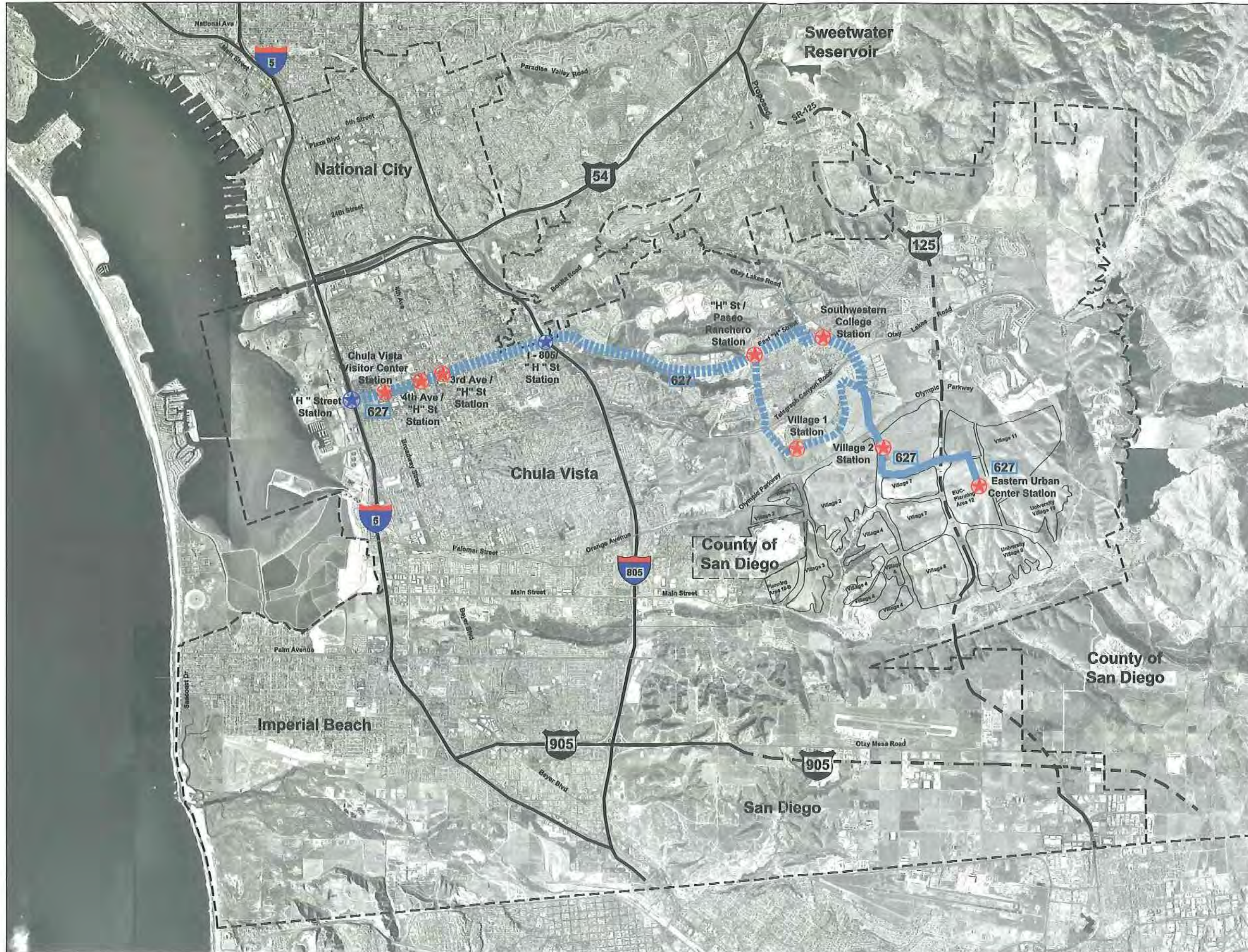


| Station Types                   |                        |                          |                           |                            |                           |                            |                     |                       |                 |
|---------------------------------|------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------|-----------------|
| Station Locations               | Freeway Median Station | Off Street / Transit Hub | Curbside Far-side Station | Curbside Near-side Station | Curbside Bulb-out Station | Curbside Mid-Block Station | Median Dual Station | Median Offset Station | Turnout Station |
| H Street Trolley*               |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |
| Chula Vista Center*             |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |
| 4 <sup>th</sup> Street Scripps* |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |
| 3 <sup>rd</sup> Street Gateway* |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |
| I-805 Terra Nova*               |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Paseo Ranchero*                 |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Southwestern College*           |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |
| Village 2                       |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Eastern Urban Center (EUC)      |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |

\*Stations that are discussed in the South Bay Showcase Project

**Table 5.1:**  
**627 Summary Table - Station Locations and Types**











## Alignment and Stations

MTDB - South Bay Transit  
First Project

**ROUTE 627 - H Street Trolley**  
Station to Eastern Urban Center

### LEGEND

-  Alignment
-  Showcase Route -  
Not a part of this study  
(See Appendix)
-  Project Boundary
-  Proposed Freeway
-  Red Car Stations
-  Yellow and Red Car  
Stations

0 1/2 1 mile



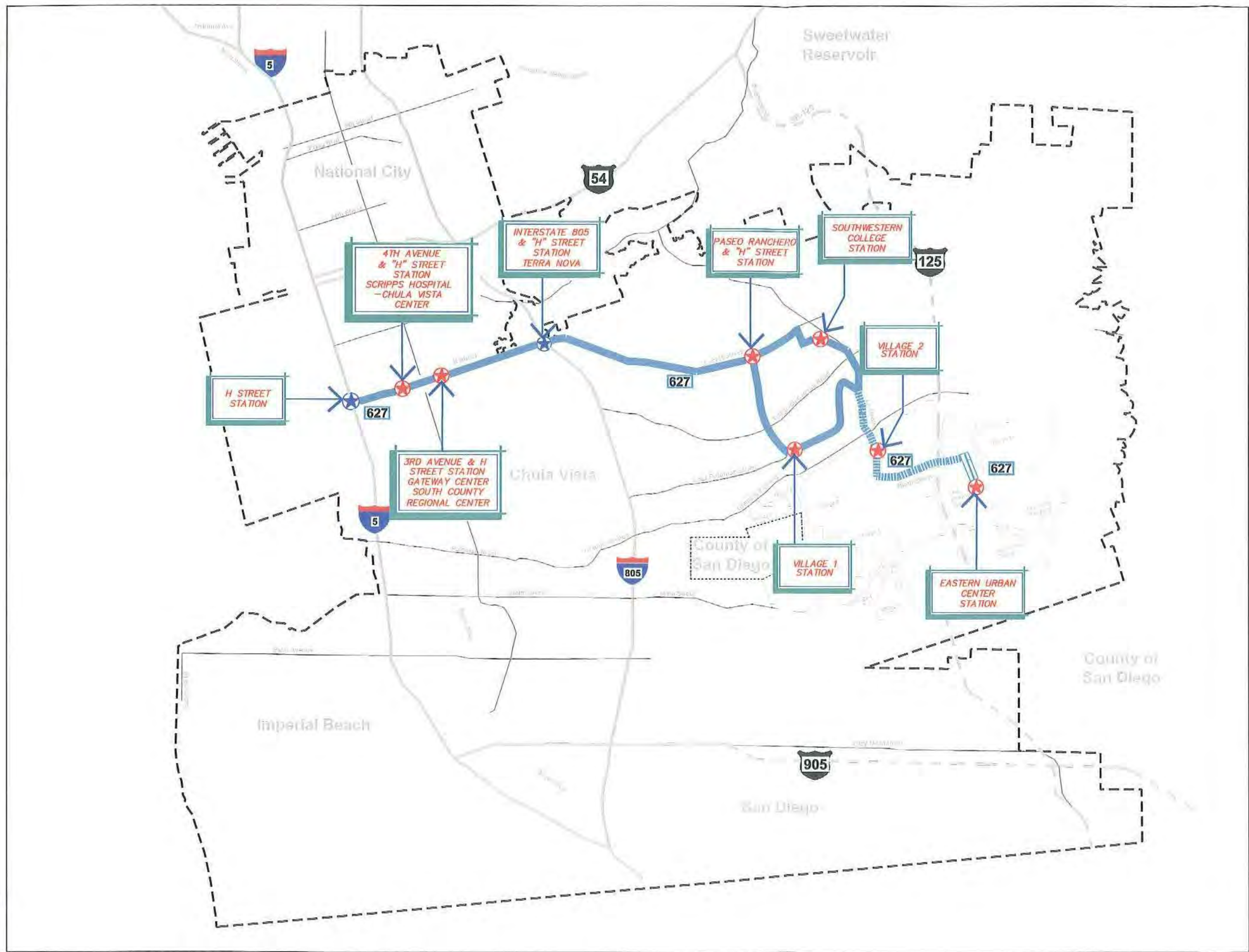
ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 5.1**  
**ALIGNMENT AND STATIONS MAP**  
**627 ALIGNMENT**





Transit Priority Treatments

MTDB - South Bay Transit  
First Project

ROUTE 627 - H Street Trolley  
Station to Eastern Urban Center

LEGEND

- Dedicated Alignment Median Running
- Mixed Flow Alignment
- Showcase Route - Not a part of this study (See Appendix)
- Project Boundary
- Proposed Freeway
- Red Car Stations
- Yellow and Red Car Stations

NOTE: Priority Signals will be used at all signalized intersection along the alignment.



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 5.2**  
**PRIORITY TREATMENTS MAP**  
**627 ALIGNMENT**

## 5.2 627 ALIGNMENT ANALYSIS

This section discusses the 627 alignment and areas of significant traffic congestion that will inhibit the direct routing or reduce the necessary high travel speeds and service reliability for the Transit First route. Also identified in this section are the transit priority measures that could be used to minimize the impact of these congested areas and maintain service reliability. The feasibility assessment of implementing these transit priority measures is also discussed in this chapter. Additionally, station locations and their requirements are identified along with land uses and access opportunities assisting and supporting the station.

### A. Traffic Congestion

#### ▪ Near Term (2010)

Traffic levels of service (LOS) on the route alignment roadways are projected to vary between A and B in the near term scenario.

The portion of La Media Road between East Palomar Street and Birch Road is projected to operate at LOS A. The alignment segment on Birch Road from La Media Road to the "Spine Road" leading to the EUC is projected to operate at LOS B.

#### ▪ Long Term (2020)

Traffic LOS on all the alignment roadways are projected to vary between A and C in the long term scenario.

The portion of La Media between East Palomar Street and Birch Street is projected to continue operating at LOS A. The alignment segment on Birch Road from La Media to the "Spine Road" leading to the EUC is projected to operate at LOS C.

|                                                  | 2010<br>Near Term |   |   |   |   |   | 2020<br>Long Term |   |   |   |   |   |
|--------------------------------------------------|-------------------|---|---|---|---|---|-------------------|---|---|---|---|---|
| Levels Of Service (LOS)                          | A                 | B | C | D | E | F | A                 | B | C | D | E | F |
| <b>La Media Road</b><br>E. Palomar to Birch Road | ●                 |   |   |   |   |   |                   | ● |   |   |   |   |
| <b>Birch Road</b><br>La Media to "Spine Road"    | ●                 |   |   |   |   |   |                   |   | ● |   |   |   |

Levels of Service are ranked from LOS A =Best to LOS F =Worst.

Ranking is derived from San Diego Street Design Manual which cross-references roadway classifications, average daily traffic and levels of service. See Chapter 1, Table 1.1 for ranking criteria.

**Table 5.2:**  
**627 Alignment - Congestion Levels**



## **B. Physical Constraints**

The physical constraints are not significant in this portion of the alignment. Planning efforts for Otay Ranch have anticipated the implementation of a transit alignment by providing dedicated transit lanes within the "Spine Road" right-of-way leading to the EUC Village.

The right-of-ways and traffic volumes for the other streets identified for the alignment allows for mixed-flow transit lanes and will not require additional acquisitions or transit priority treatments. A summary of these comments are illustrated in **Figure 5.3**.

## **C. Priority Measures**

### ▪ **Near Term (2010) and Long Term (2020)**

Based on projected traffic levels on the alignment roadways, mixed-flow transit operations should be sufficient on La Media Road and Birch Road as illustrated in **Figure 5.2**.

Segments of the alignment will share the dedicated transit median proposed for the north/south "Spine Road" leading to the EUC also illustrated in **Figure 5.2**

Transit priority traffic signal measures should be considered at all major signalized intersections.

## **D. Engineering and Environmental Issues**

The following are engineering, environmental issues potentially affecting the priority measures identified for the alignment.

### ▪ **La Media Road - East Palomar Street to Birch Street**

- With the use of mixed-flow transit lanes there are no significant engineering issues for this portion of the alignment.
- No significant environmental issues appear to be associated with this portion of the alignment. There would be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes.

### ▪ **Birch Street - La Media to Spine Road**

- With the use of mixed-flow transit lanes there are no significant engineering issues for this portion of the alignment.
- No significant environmental issues appear to be associated with this portion of the alignment. There would be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes. Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

- **Spine Road to EUC**

- The engineering, environmental and even the physical issues are not significant in this portion of the alignment. Planning efforts for Otay Ranch have anticipated the implementation of a transit alignment by providing dedicated transit lanes within the "Spine Road" right-of-way located in EUC Village.

#### **E. Feasibility of Priority Treatment Implementation**

- **Near Term (2010) and Long Term (2020)**

Based on Otay Ranch's EUC preliminary plans the development is incorporating median running transit lanes as part of the project. The planned roadway network within La Media Road and Birch Road will be able to accommodate mixed-flow transit lanes given the proposed traffic volumes. These planning efforts and area development characteristics will allow for a high feasibility of implementing the proposed transit priority measures in this area of the alignment.

#### **F. Conclusions**

The levels of congestion, engineering issues, and the physical constraints for the portion of the 627 route being studied require a minimum of priority treatments for implementation. Based on planning efforts within the study area and the area's characteristics, the transit alignment and the proposed priority treatments are feasible for implementation. This alignment should be retained in the Regional Transportation Plan (RTP) as a viable project.

Physical Constraints  
Map

MTDB - South Bay Transit  
First Project

ROUTE 627 - H Street Trolley  
Station to Eastern Urban Center

LEGEND

- Alignment
- Showcase Route - Not a part of this study (See Appendix)
- Project Boundary
- Proposed Freeway
- Red Car Stations
- Yellow and Red Car Stations

0 1/2 1 mile

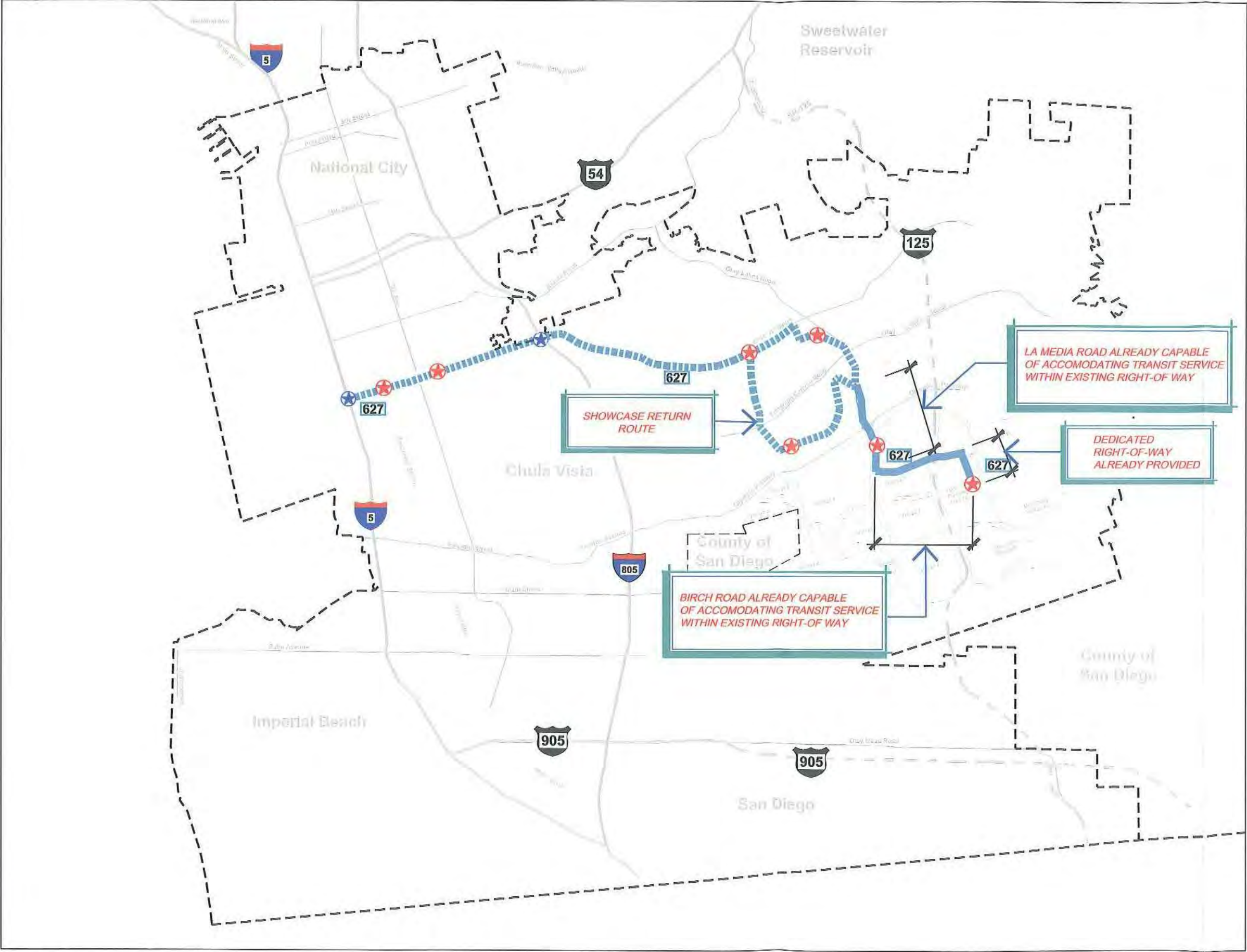


ENGINEERS  
PLANNERS  
ECONOMISTS

Wilbur Smith Associates

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

FIGURE 5.3  
PHYSICAL CONSTRAINTS MAP  
627 ALIGNMENT



### 5.3 STATION LOCATION AND TYPES

The majority of the 627 alignment is being studied as an "Early Action Project," therefore; only two (2) stations will be reviewed for this report. This section reviews the station location, right-of-way requirements, and land use integration opportunities. The section also discusses pedestrian access opportunities and improvements to the station from the surrounding community.

#### A. Village 2 Station

Based on the transit priority treatment it is anticipated that two curbside stations would be developed at this location. The southbound alignment would be served on the southwest side of La Media Road at the first intersection south of Olympic Parkway thus requiring a far-side type station. The north bound alignment is on the northeast side of La Media Road again north of the first intersection south of Olympic Parkway requiring a far-side station as shown in *Figure 5.4*.

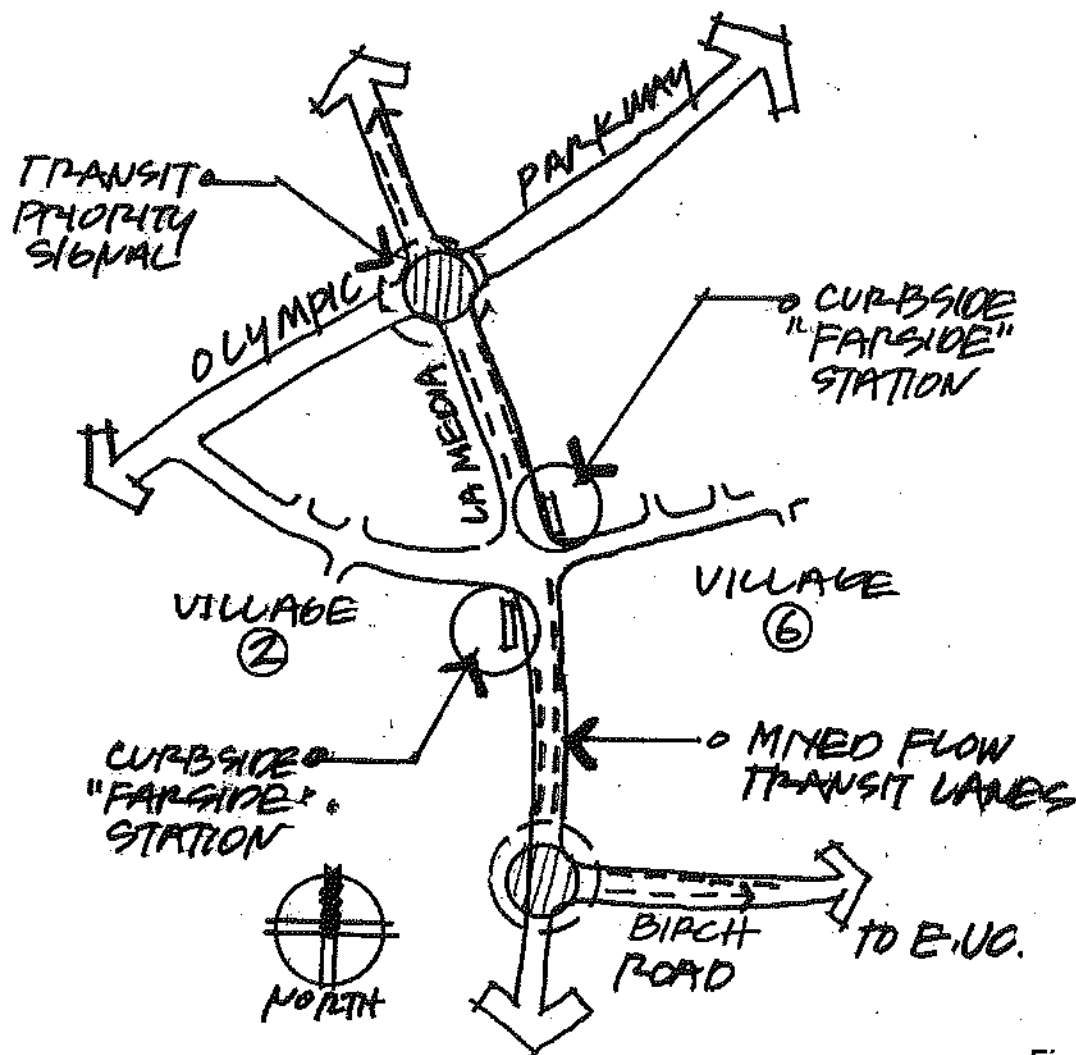


Figure 5.4  
Village 2 Station Location



▪ **Right-of-Way Requirements**

The right-of-way requirements for a curbside station would be 15-feet x 150-feet similar to those shown in **Figure 1.6**. These requirements will accommodate a 15-foot boarding and alighting platforms and the length would allow for multiple transit vehicles. No additional right-of-way is anticipated since the improvements would occur within the existing right-of-way and landscaped setbacks along La Media Road.

▪ **Land Use Integration**

*This station is located in an area currently being planned. Existing, proposed and opportunities for land use integration will be provided by the City of Chula Vista for future implementation.*

▪ **Access**

The station location is well sited to take advantage of surrounding land uses associated with Village 2. Since Village 2 is being planned as a Transit Oriented Neighborhood the pedestrian environment should be pleasant and direct. Providing direct pedestrian connections to the station should be a priority as the planning of Village 2 continues.

It should be noted that due to the elevation difference between Village 6 and La Media Road it may not be feasible to provide direct pedestrian access to the station. The pedestrian access may only be accommodated by the local residential streets.

▪ **Village 2 Station Issues**

For the proposed Village 2 Station located on La Media Road the following are possible issues affecting the implementation of station improvements.

- There should be no significant engineering issues associated with this station. As stated earlier, no additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the adjacent landscaped setbacks.

**Environmental Issues**

- A traffic and circulation study may be needed to determine if any impacts may be associated with the proposed transit priority signals at the intersections of Olympic Parkway and Birch Road.

**Community Issues**

- No significant community issues are anticipated.

## **B. Eastern Urban Center (EUC) Station**

The EUC Station is intended to be situated within the middle of the proposed EUC development area. The EUC is being planned as a major mixed-use center and comprised of a variety of intensive land uses. The current station location will be a joint effort that is comprised of the City of Chula, MTDB and the developers of the EUC site. The transit alignment will be within a median running transit lane on the "Spine Road" that is being designed as a major north/south transit corridor.

The station will have to accommodate multiple Red, Blue and Green Car alignments with transfer capabilities. This station should be considered as a major transit hub for the Tier 1 alignments including the 627, the RC-1, and the 694.

Continued coordination and cooperation with the City of Chula Vista, the developer of the EUC, and MTDB will be needed to ensure that the transit station requirements are met. MTDB should continue to provide site specific design requirements to the developers as the planning studies for the EUC are prepared.

### ▪ **Land Use Integration**

The EUC site is currently being planned and the "existing" land uses will be similar to that shown in the proposed land use plan for 2020. Current planning efforts involve a significant mixed-use center that will be located adjacent to the proposed station site. The EUC's mixed-use center is intended to be a major focal point for Otay Ranch with land uses comprised of regional commercial, office, and residential uses. In addition there is a significant amount of residential development proposed for Village 11 which is within the ¼ mile of the EUC station. All of the above mentioned uses will be very transit supportive.

No additional land use recommendations are proposed at this time since planning studies are currently being prepared. Coordination efforts with the developer of the EUC, City of Chula Vista, and MTDB should continue. These coordination efforts will ensure that the mix of land uses, intensity of land uses, station requirements and the land use integration occurs at this location.

### ▪ **Access**

The EUC Station location will be well sited to take advantage of the proposed mix of land uses and provide "front-door" access. With final design the pedestrian environment could be very strong allowing transit riders to walk directly and safely to many of the proposed uses. Care should also be given to allow for direct pedestrian access to Village 11.

### ▪ **EUC Station Issues**

For the proposed the EUC Station located in Village 12 of Otay Ranch the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- Because this is the terminus for the 627 alignment the station design will need to address "turn around" capabilities for the 627.

- Bay and platform provisions for Green, Red, Blue and Yellow Car alignments sharing the station will have to be provided.
- The City of Chula Vista, MTDB and the developers will need to coordinate the needs and size of the station as the EUC is planned.

***Environmental Issues***

- No significant environmental issues are anticipated. A traffic study may be needed to assess the impact the transit service has on local traffic.

***Community Issues***

- The EUC has always been planned as the location for a major transit hub. The planning process with the developer, MTDB, and the City of Chula Vista should continue to insure that the transit requirements are met. No significant community related issues for the station design are anticipated at this time.

## Chapter 6 - 694 Alignment

### 6.1 SUMMARY OVERVIEW AND CONCLUSIONS

The following is a brief overview of the general route alignment, station types, and priority treatments for the 694 alignment. Additional project analysis and more detailed information pertaining to the alignment designs are provided in the sections following this summary.

#### A. 694 Alignment - Otay Mesa Border Crossing to Downtown San Diego

The 694 alignment will serve the Otay Mesa Border Crossing and the surrounding employment center associated with the border. The 694 will travel north and west through the City of Chula Vista and will continue to Downtown San Diego as illustrated in **Figure 6.1**.

This alignment will begin at the Otay Mesa Border Crossing at the proposed station located at the intersection of Roll Drive and Via de la Amistad. The alignment will continue north on State Route 905 (SR-905) to State Route 125 (SR-125) towards Otay Ranch. The alignment will enter Otay Ranch at / or near Village 9 or the University Planning Area and will continue north to the Eastern Urban Center (EUC). At the EUC the alignment will continue north to the Freeway Oriented Commercial (FOC) site via the "Spine Road." After reaching the FOC Station the alignment will turn west through Villages 6 and 5 of Otay Ranch. The alignment will continue west on East Palomar Street towards Village 1 of Otay Ranch. The alignment will continue west on East Palomar Street and will transition to Interstate 805 (I-805). The 694 alignment will then travel north on I-805 through the project study area. The corridor length in the project study area is approximately 16.75-miles in length.

Outside of the project study area the alignment will continue north on I-805 to State Route 94 (SR-94). The alignment is proposed to travel west on SR-94 to its ultimate terminus in Downtown San Diego.

The ability for the alignment to reach its terminus in Downtown San Diego is outside of this project's scope of work. A future study will have to be conducted to determine the necessary improvements and priority measures to assure that the 694 can reliably reach its final destination.

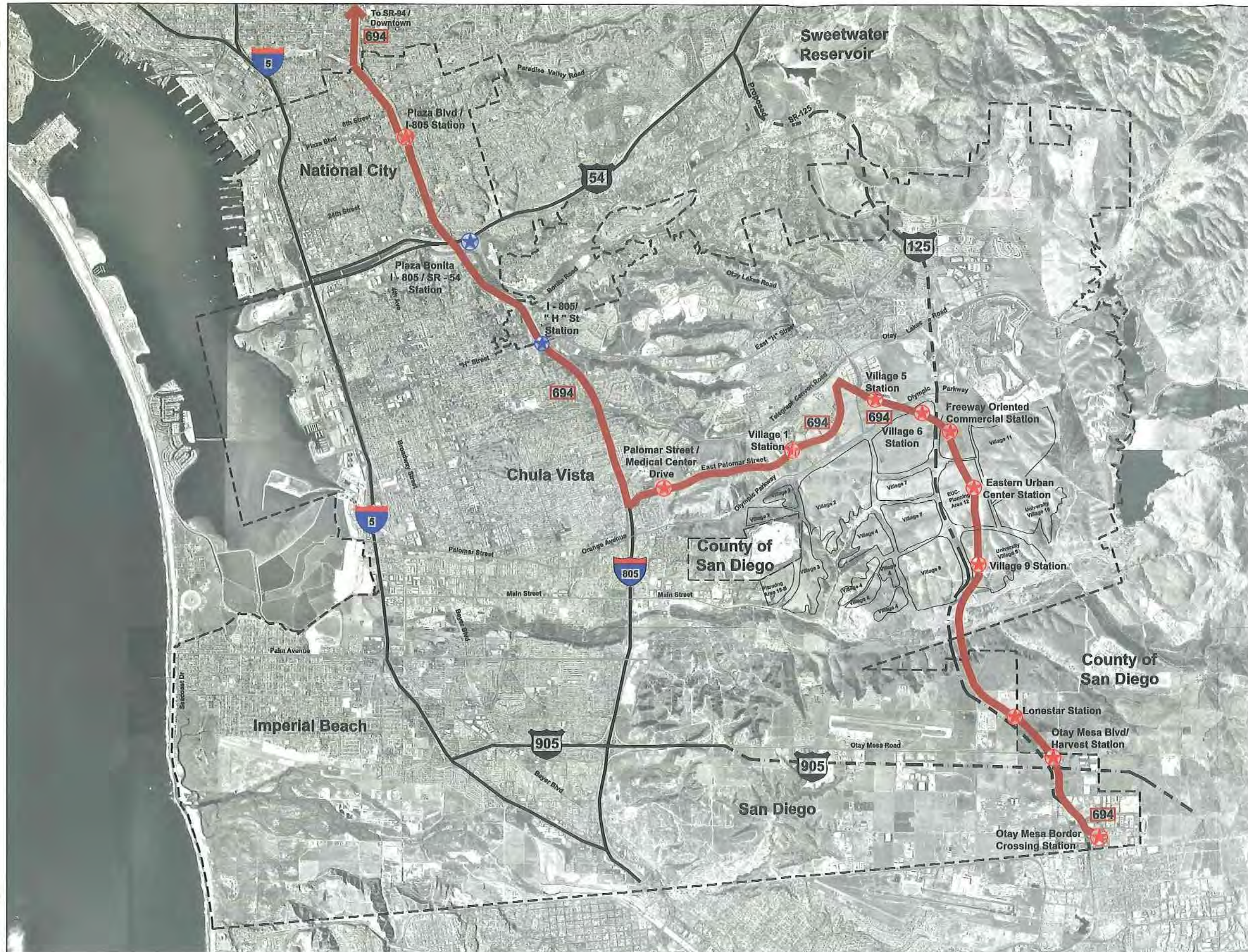
#### B. Alignment Station Types

The South Bay Transit First Stations for the 694 alignment include 10 locations based on the field research and project analysis. The station locations are illustrated in **Figure 6.1**. The type of transit station associated with each location is summarized in **Table 6.1**. Future discussion for each station is provided in *Section 6.3: Station Location and Types*.

#### C. Priority Treatment Conclusions

The priority treatments conclusions for the 694 are summarized and illustrated in **Figure 6.2**. These recommendations are based primarily on the corridor's traffic congestion and physical constraints and their feasibility for implementation.





## Alignment and Stations

MTDB - South Bay Transit  
First Project

**ROUTE 694** - Otay Mesa Border  
Crossing to Interstate 805  
Downtown San Diego

### LEGEND

- Alignment
- Project Boundary
- Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

0 1/2 1 mile



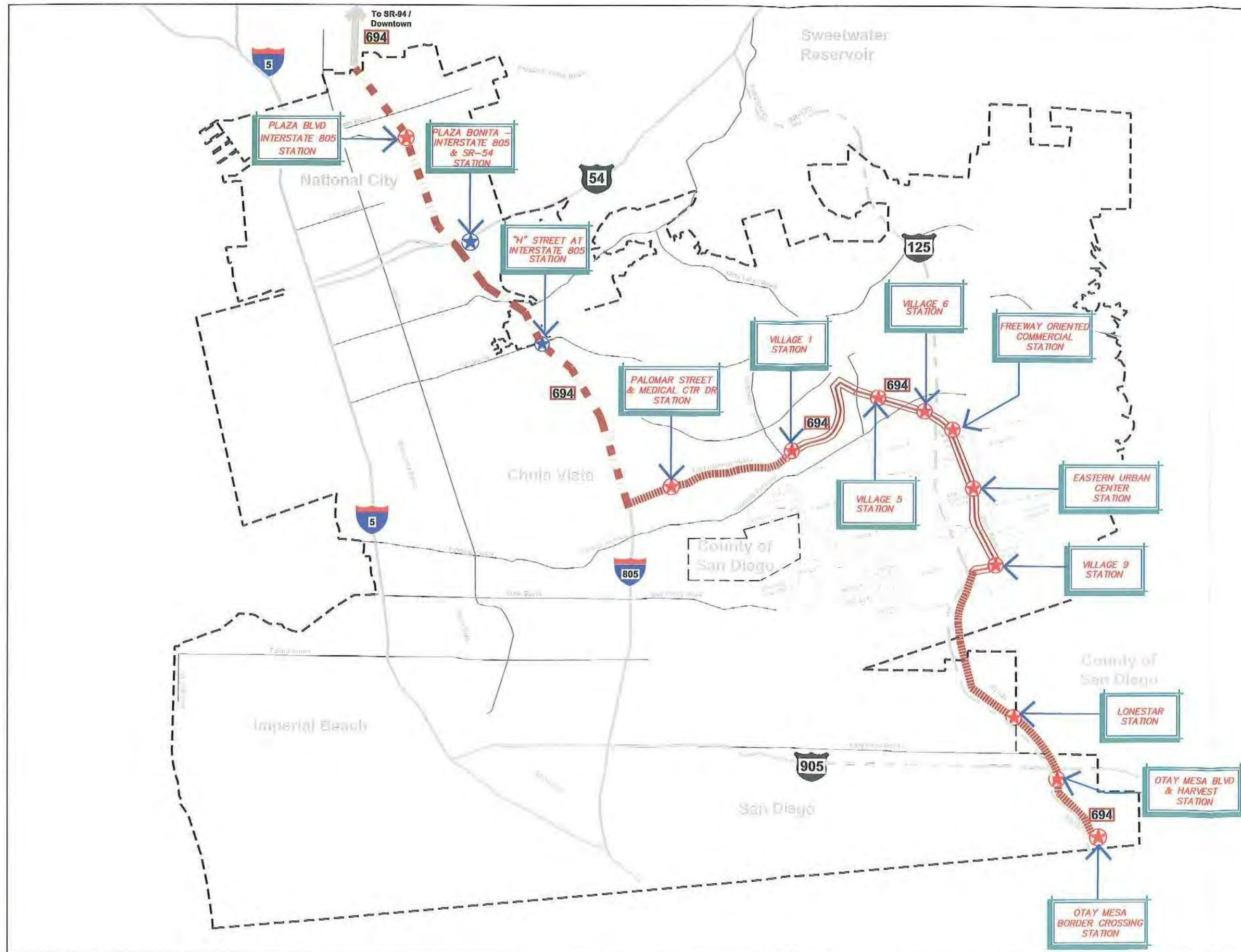
ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 6.1**  
**ALIGNMENT AND STATIONS MAP**  
**694 ALIGNMENT**





## Transit Priority Treatments

MTDB - South Bay Transit  
First Project

**ROUTE 694 - Otay Mesa Border**  
Crossing to Interstate 805  
Downtown San Diego

### LEGEND

- - - - - Dedicated Alignment HOV Lanes
- Dedicated Alignment Median Running
- ||||| Mixed Flow Alignment
- - - - - Project Boundary
- - - - - Proposed Freeways
- ★ Red Car Stations
- ★ Yellow and Red Car Stations

NOTE: Priority Signals will be used at all signalized intersection along the alignment.

0 1/2 1 mile



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 6.2**  
**PRIORITY TREATMENTS MAP**  
**694 ALIGNMENT**

| Station Types                                    |                        |                          |                           |                            |                           |                            |                     |                       |                         |
|--------------------------------------------------|------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------|-------------------------|
| Station Locations                                | Freeway Median Station | Off Street / Transit Hub | Curbside Far-side Station | Curbside Near-side Station | Curbside Bulb-out Station | Curbside Mid-Block Station | Median Dual Station | Median Offset Station | Freeway Turnout Station |
| I-805 and Plaza Blvd                             | ●                      |                          |                           |                            |                           |                            |                     |                       |                         |
| I-805 and SR-54 at Plaza Bonita                  |                        | ●                        |                           |                            |                           |                            |                     |                       |                         |
| I-805 and H Street at Terra Nova Shopping Center | ●                      |                          |                           |                            |                           |                            |                     |                       |                         |
| East Palomar Street and Medical Center Drive     |                        |                          | ●                         |                            |                           |                            |                     |                       |                         |
| Otay Ranch Village 1                             |                        |                          |                           |                            |                           |                            | ●                   |                       |                         |
| Otay Ranch Village 5                             |                        |                          |                           |                            |                           |                            | ●                   |                       |                         |
| Otay Ranch Village 6                             |                        |                          |                           |                            |                           |                            | ●                   |                       |                         |
| Otay Ranch Eastern Urban Center                  |                        |                          |                           |                            |                           |                            | ●                   |                       |                         |
| Otay Ranch University/ Village 9 Planning*       |                        |                          | ○                         |                            |                           |                            | ○                   |                       |                         |
| Lone Star                                        |                        |                          |                           |                            |                           |                            |                     |                       | ●                       |
| Otay Mesa Blvd. Harvest                          |                        |                          |                           |                            |                           |                            |                     |                       | ●                       |
| Otay Mesa Border Crossing                        |                        | ●                        |                           |                            |                           |                            |                     |                       |                         |

\*Stations currently being planned as part of the Otay Ranch Composite Planning Studies. Either curbside or median station are being explored.

**Table 6.1:**  
**694 Summary Table-Station Locations and Types**

## 6.2 694 ALIGNMENT ANALYSIS

This section discusses the 694 alignment and areas of significant traffic congestion that will inhibit the direct routing or reduce the high travel speeds and service reliability necessary for the Transit First routes. Also identified in this section are transit priority measures that could be used to minimize the impacts of these congested areas, maintain service reliability and their feasibility of implementing the priority measures. Additionally, station locations and their types and requirements are identified along with land use opportunities assisting and supporting the station.

### A. Traffic Congestion

#### ▪ Near Term (2010)

Traffic levels of service (LOS) on the route alignment roadways are projected to vary between A and F in the near term scenario.

SR -905 between Otay Mesa Road and SR-125 is projected to operate at LOS A. The SR-125 segment of the alignment is projected to operate at LOS A. The area on East Palomar Street between Olympic Parkway and I-805 is projected to operate between LOS A and B.

The area on I-805 between East Palomar Street, Plaza Boulevard and to the northern edge of the project study area is expected to operate at LOS F.

#### ▪ Long Term (2020)

Traffic LOS on the route alignment roadways are projected to vary between A and F in the long term scenario.

SR -905 between Otay Mesa Road and SR-125 is projected to operate at LOS A. The SR-125 segment of the alignment is projected to operate at LOS A. The area on East Palomar Street between Olympic Parkway and I-805 is projected to operate between LOS B and C. The area on I-805 between East Palomar Street and Plaza Boulevard is expected to continue to operate at LOS F.

|                                                    | 2010<br>Near Term |   |   |   |   |   | 2020<br>Long Term |   |   |   |   |   |
|----------------------------------------------------|-------------------|---|---|---|---|---|-------------------|---|---|---|---|---|
| Levels Of Service(LOS)                             | A                 | B | C | D | E | F | A                 | B | C | D | E | F |
| <b>I-805</b><br>Plaza Blvd to East Palomar         |                   |   |   |   |   | ● |                   |   |   |   |   | ● |
| <b>East Palomar</b><br>I-805 to Village 1          | ●                 | ● |   |   |   |   |                   | ● | ● |   |   |   |
| <b>SR-125</b><br>Rock Mountain Road to SR-905      | ●                 |   |   |   |   |   | ●                 |   |   |   |   |   |
| <b>SR-905</b><br>Otay Mesa Rd. to Otay Mesa Border | ●                 |   |   |   |   |   | ●                 |   |   |   |   |   |

Levels of Service are ranked from LOS A =Best to LOS F =Worst.

Ranking is derived from San Diego Street Design Manual which cross-references roadway classifications, average daily traffic and levels of service. See Chapter 1, Table 1.1 for ranking criteria.

**Table 6.2:**  
**694 Alignment - Congestion Levels**



## B. Physical Constraints

There are numerous physical constraints affecting the type of priority measures that will be need to be implemented along the route. These physical constraints are outlined below and illustrated in **Figure 4.3**:

- A portion of the 694 will operate within the I-805 corridor right-of-way which is constrained in several areas. The primary physical constraints on I-805 occur between East Palomar Street and Plaza Boulevard. This section of the corridor is limited in right-of-way width. This section corridor is constrained by existing development, environmental features, interchange structures, and topography. All these constraints limit the ability to expand the right-of-way for dedicated transit lanes. Also, some significant engineering solutions may be required to provide direct accessibility to the proposed stations at the Plaza Bonita and Terra Nova Shopping Centers.
- The proposed station at the Plaza Bonita Shopping Center will require the 694 alignment to cross the Sweetwater River Channel. This environmentally sensitive area will present challenges as the alignment approaches the shopping center from the south. Also, as the alignment approaches the shopping center from the north it will have to exit the I-805 corridor at/or near the State Route (SR-54) interchange.
- The SR-54 interchange consists of a large collection of overpasses, underpasses and ramps. The alignment's access design to Plaza Bonita Shopping Center will require significant engineering to provide ingress and egress to and from the station. It is recognized that a major redesign of these interchanges will be needed when the Managed Lanes (ML) associated with I-805 improvements are constructed (as outlined in SANDAG's Mobility 2030 Transportation Plan). When these improvements are implemented the direct transit access to Plaza Bonita Shopping Center could be created.
- The topography at the Terra Nova Shopping Center is steep at this point and the interstate is significantly higher than the surrounding development area. The station design and the alignment will need to address this vertical differential. There is also a small drainage way between the shopping center and the interstate right-of-way. This drainage area will need to be investigated to determine if there are any significant environmental issues that need to be addressed.
- Access onto the interstate from East Palomar Street is another feature that will have to be addressed when establishing improvements or priority measures. There are currently no access ramps at East Palomar Street. A structural feature is needed to provide access to the interstate at this transition point. Although there is enough area to accommodate the access ramps the vertical differences are significant.
- The other location where physical constraints could affect the alignment is at East Palomar Street just east of I-805. The right-of-way on East Palomar Street from Oleander Avenue to I-805 is a narrower (63-feet curb to curb) than the right-of-way provided east of Oleander Avenue (78-feet curb to curb). Also, a residential development is located within close proximity to the road in the area between Oleander Avenue and I-805. Depending on the type of priority measures needed in this area it may be difficult to implement improvements without acquisition of additional right-of-way.
- The rest of the alignment area east of I-805 has few physical features that will impede the implementation of the alignment. However, as the alignment approaches SR-125 through Olay Ranch Village 6 it will have to cross over the toll road. A summary of these comments are illustrated in **Figure 6.3**.



### C. Priority Treatments

The following priority measures are proposed to ensure that the transit lanes will avoid the identified congestion areas and is illustrated in **Figure 6.2**.

- **Near Term (2010) and Long Term (2020)**

Based on projected traffic levels on the alignment roadways, mixed-flow transit operations should be sufficient on SR-905 from the border at Otay Mesa to SR-125. Mixed-flow transit lanes will also be used for the portion of the alignment traveling on SR-125 to Otay Ranch.

Segments of the alignment passing through Otay Ranch will be located within previously planned dedicated medians and parkways. This includes the portion of the alignment leaving SR-125 passing through the University Planning Area and the Eastern Urban Center to Village 1 as shown in **Figure 6.4**. These dedicated transit lanes will be median serving. At this time the specific alignment through Village 9 of Otay Ranch is still being discussed. Transit access to and from the SR-125 is critical in this area to maintain a station that serves the activity center in Village 9 as well as providing direct access to SR-125. An elevated structure will be required when the alignment is crossing SR-125 from the Otay Ranch FOC site to Village 6.

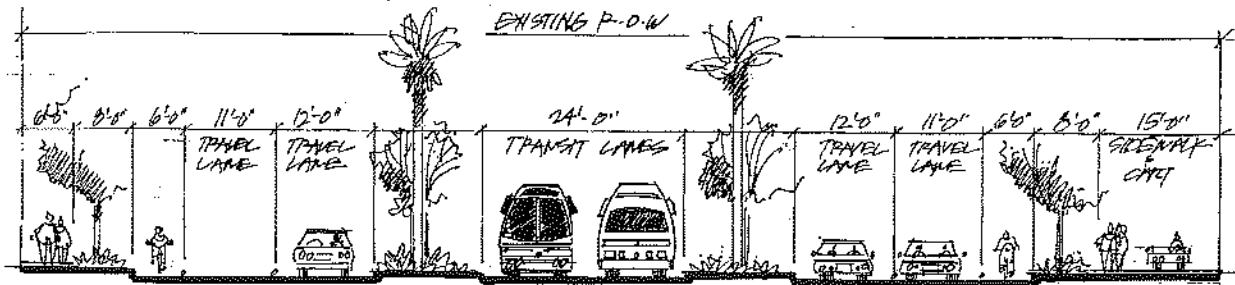
On East Palomar Street from west of the intersection of Heritage Road to I-805 the alignment will return to mixed-flow transit lanes. Major infrastructure improvements will be needed at I-805 and East Palomar Street, since I-805 on/off-ramps are not currently provided in this area. A drop ramp, from the East Palomar Street Bridge to the interstate is needed to transition from the local street, as illustrated in **Figure 6.5 and 6.5A**. It is anticipated that the drop ramp will be 36-feet wide and occurring at the mid-point of the bridge and coordinated with a transit priority signal if necessary.

Dedicated transit lanes will be necessary on I-805 in the near and long term scenarios. Although near term traffic levels on I-805 indicate the need for dedicated transit lanes the only feasible alternative is to utilize the existing shoulder lanes. This alternative can only be accomplished with the approval from Caltrans. Recently Caltrans has indicated the possibility of using shoulder lanes and has agreed to review if freeway shoulders could be part of an Early Action priority measure.

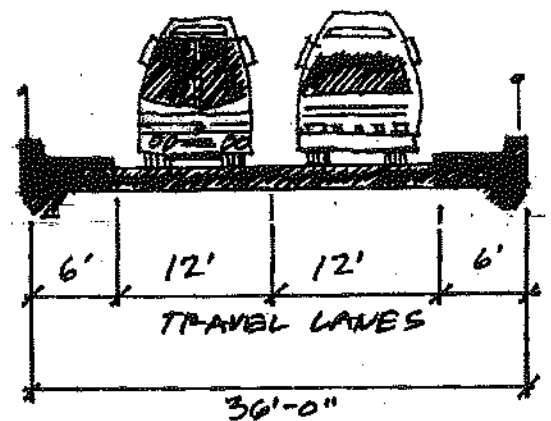
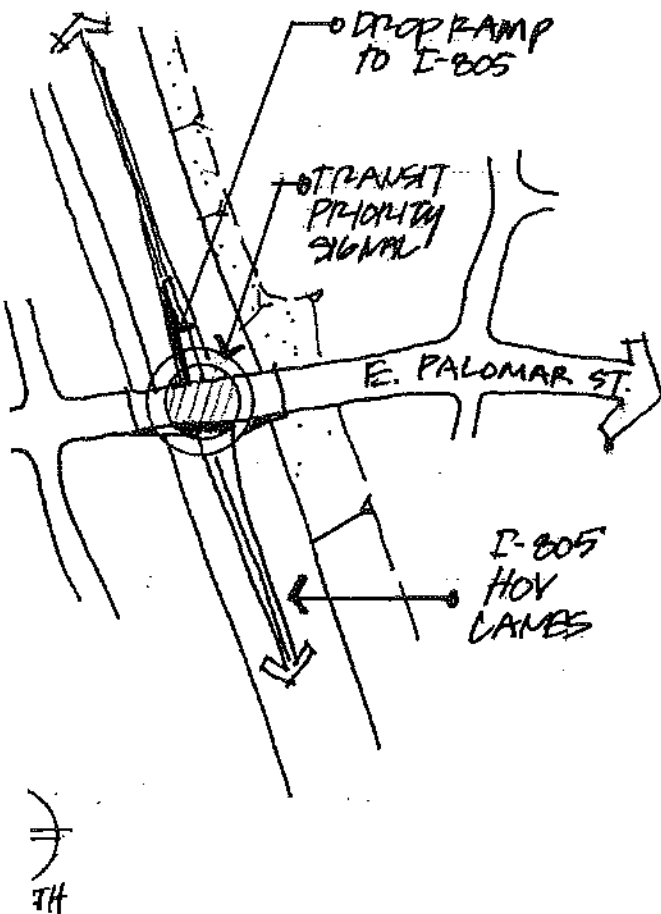
If the use of shoulder lanes is not feasible, then near term interim improvements are not suggested since the proposed Managed Lanes are planned for I-805 prior to 2030. In the long-term scenario transit on I-805 will need to utilize the planned managed lanes to bypass the expected congestion on the interstate corridor.

Access to the station proposed at the Plaza Bonita Shopping Center will require major infrastructure improvements. A fly-over type facility is needed for the north bound travel lane to connect south of Plaza Bonita Road. Three different concepts for transit accessing the Plaza Bonita station have been studied and are illustrated in **Figures 6.6 to 6.8**.

As illustrated in **Figure 6.6**, the preferred alignment will provide access to northbound vehicles by use of a fly-over facility that will connect I-805 to Plaza Bonita Road prior to the bridge crossing at Sweetwater River. The alignment will continue on Plaza



**Figure 6.4:**  
Dedicated Median Transit Lanes in Otay Ranch



**Figure 6.5:**  
Drop Ramp for East Palomar Street



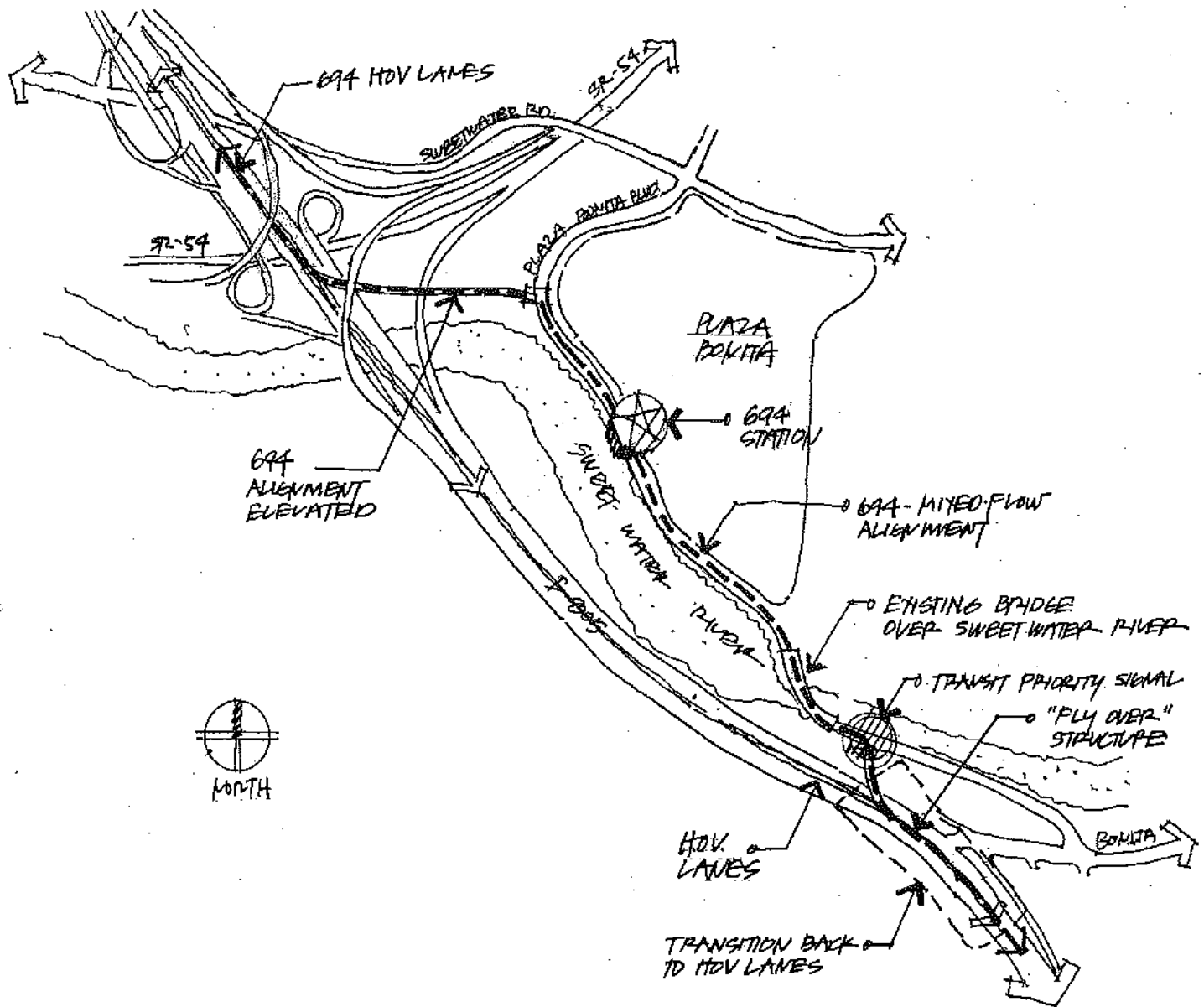


Figure 6.6:  
Plaza Bonita Preferred Station Access

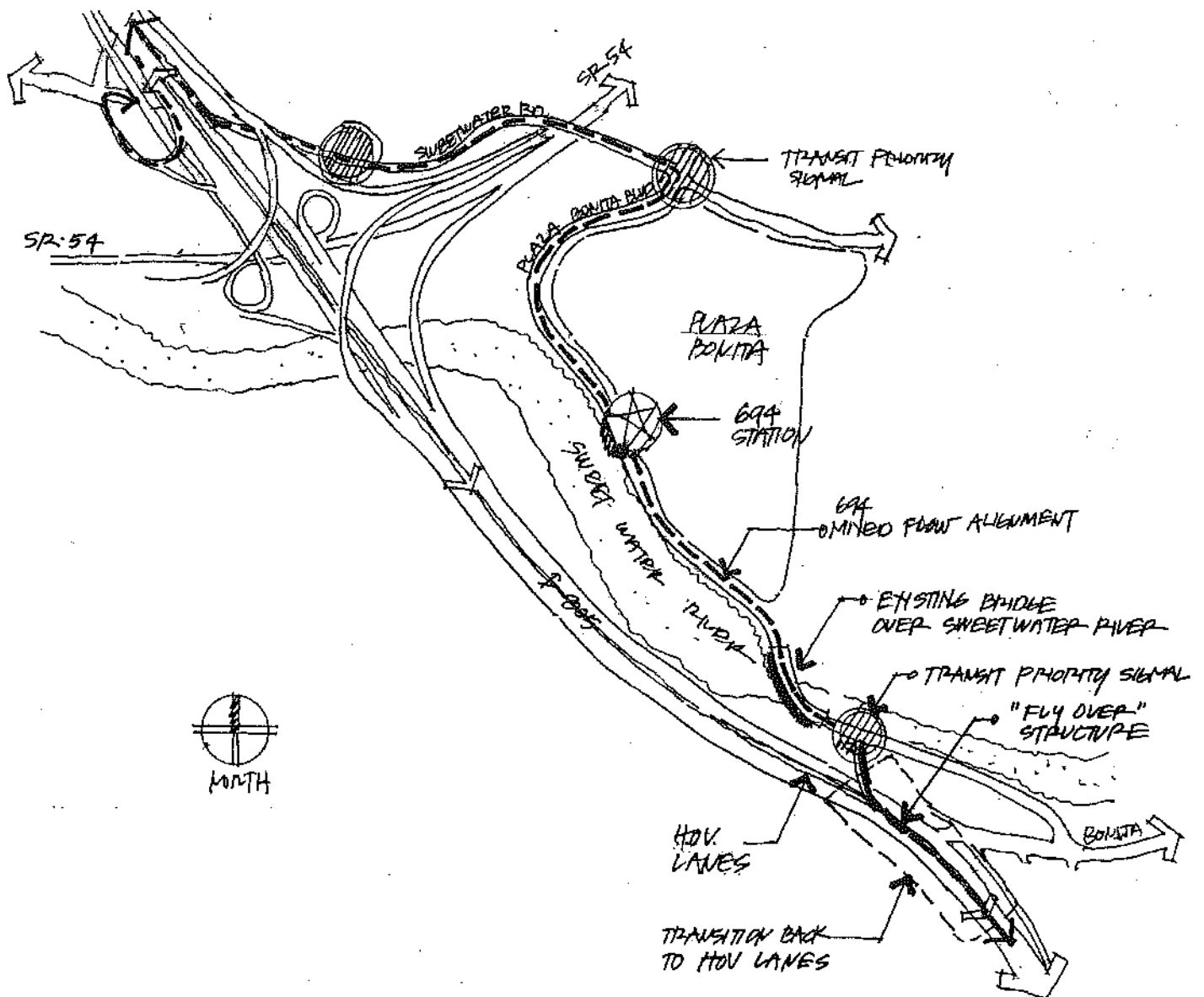
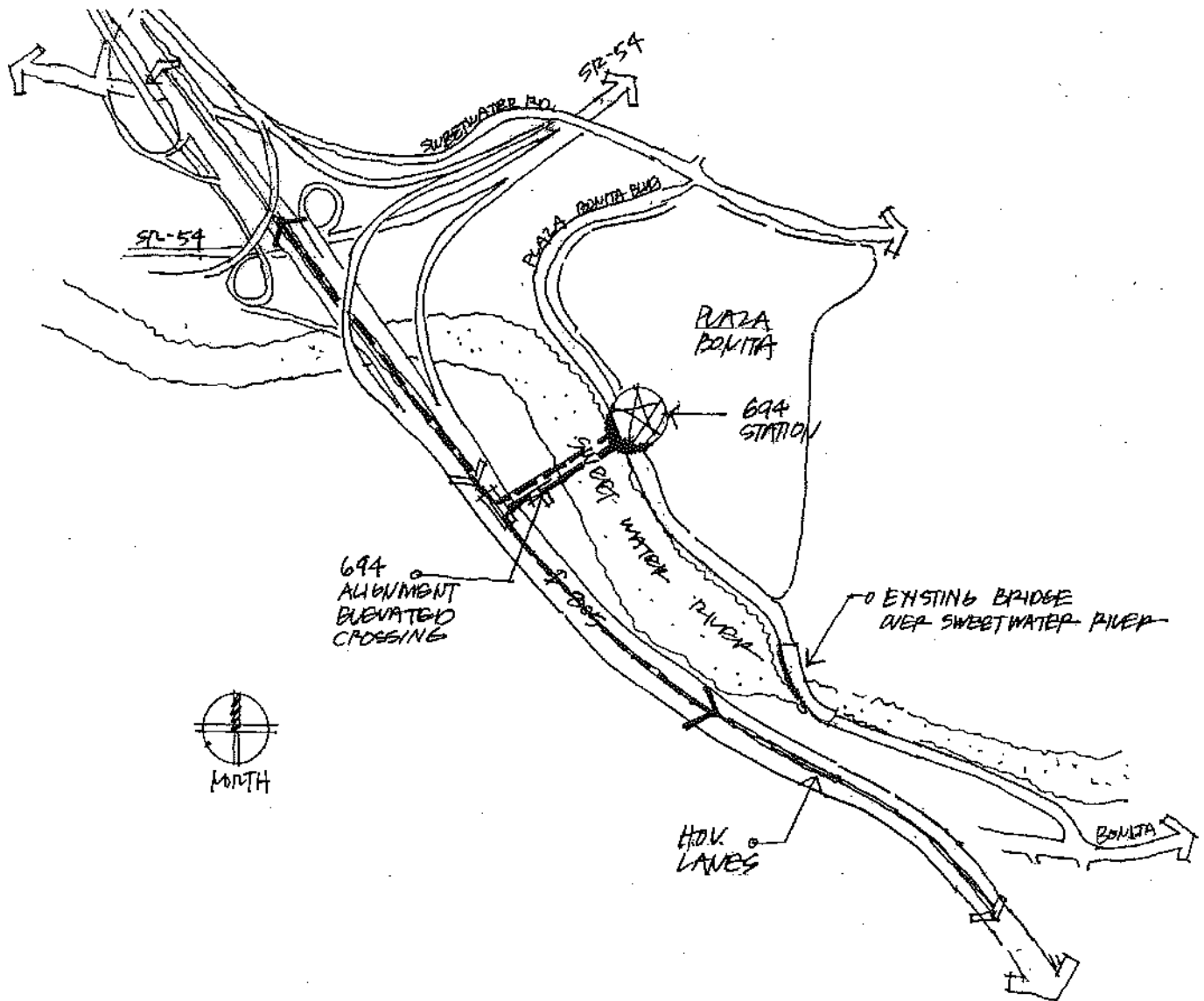


Figure 6.7:  
Plaza Bonita Station Alternative- A Access



**Figure 6.8:**  
**Plaza Bonita Station Alternative- B Access**



Bonita Road to the station located at the shopping center. The transit vehicle will continue north on Plaza Bonita Road to a "Transit Only" intersection and will cross at an area that is outside of the Sweetwater River channel to reach I-805. With the development of the I-805 Managed Lanes the entire interchange at SR-54 and I-805 will need to be redesigned. At that time, the on/off transit ramp to Plaza Bonita south of this interchange may be possible to develop.

Also, transit priority traffic signal measures should be considered at all major intersections including:

- Intersections on Plaza Bonita Road
- Intersections on East Palomar Street
- Intersections on the "Spine Road"
- SR-125 Interchange at Rock Mountain Road
- SR-905 at Siempre Viva Road

#### **D. Engineering and Environmental Issues**

The following are engineering, environmental issues potentially affecting the priority measures identified for the alignments in existing land use areas.

##### **▪ I-805 – Project Boundary North to State Route 54**

- The 694 is planned to operate in the study area within the proposed Managed Lanes (ML) on I-805 as identified in SANDAG's Mobility 2030 Transportation Plan. These managed lanes do not currently exist and are planned for construction prior to 2030. There are numerous engineering issues associated with the implementation of these managed lanes, but they are not considered here. Construction of the managed lanes is not part of this project. Rather, the managed lanes are assumed as the basis for implementation of 694 services in the long term.
- If the use of outside shoulder lanes as a near term solution is acceptable there are several engineering issues that will need to be addressed.
  - The existing shoulders may not have been constructed as travel lanes. Using the shoulder lanes may require that the lanes be fully improved to handle transit vehicles.
  - The shoulders are typically narrower at most of the overpasses or bridges. To maintain an adequate width for the transit lane, encroachment into the existing travel lane may be required.
  - Safety and operational issues related to the on and off ramps will need to be addressed. The shoulder lanes "cross-over" the on and off ramps creating a merge problem with exiting vehicles.
  - Disabled vehicles using the shoulder lanes for emergency purposes will also create a hazard for transit vehicles sharing the shoulders.

- Merging in and out of the mixed-flow freeway travel lanes, especially during traffic peak periods, to avoid this "cross-over" maneuver will not permit the type of smooth and rapid service that is the goal of the Yellow Car service.
  - Accessing the proposed 694 station at Plaza Bonita will also require transit vehicles to leave the freeway and travel in mixed flow lanes on local surface streets. Again, this will lead to an increase of travel time for the entire length of the route.
  - Using the inside or median shoulder lanes could resolve many of the above operational and safety issues and should be further explored.
- The alignment in the long term will operate in the proposed I-805 Managed Lanes. This will require widening of the freeway to some extent throughout the entire corridor. However, it is anticipated that Caltrans will be responsible for the managed lanes implementation measures. As the alignment approaches the Plaza Boulevard Station access ramps will be needed to access the station from both directions. This is further discussed in *Section 6.3 Station Location and Types*.
  - Also, some significant engineering solutions will be required to provide direct access to the proposed stations at the Plaza Bonita Shopping Center. The proposed station at the Plaza Bonita Shopping Center will require the 694 alignment to cross the Sweetwater River at some point. Also, as the alignment approaches the shopping center from the north it will have to exit the I-805 corridor at/or near the State Route (SR-54) interchange. The SR-54 interchange consists of a large collection of overpasses, underpasses and ramps. The alignment's access design will need significant engineering improvements to provide direct ingress and egress to and from the station.
  - The primary environmental issue at this station is the Sweetwater River and insuring that there are no impacts requiring significant mitigation. Creating new crossings over the river should be avoided if possible. This is reflected in the proposed access concepts to the station illustrated in **Figure 6.6**. The access is shown over an open space area that is heavily disturbed with no significant habit.
  - South bound transit vehicle will have to travel on a new ramp or "fly-over" system that will connect to Plaza Bonita Road. The location of this ramp is critical so that there are no conflicts with the other ramps in the area.
  - For north bound transit vehicles the off ramp will begin prior to Bonita Road. The ramp or "fly-over" will then transition to Plaza Bonita Road prior to bridge spanning the Sweetwater River. The transit vehicles will then use the existing Plaza Bonita Road Bridge to cross the river.
  - It is anticipated that these new ramps will take place at the same time that the managed lanes will be implemented in the I-805. At that time the entire ramping system with SR-54 and I-805 will be under-going redesign. During this reconstruction the direct transit access to Plaza Bonita Shopping Center can be created.

▪ **I-805 –State Route 54 to East Palomar Street**

- A major engineering challenge will be to provide access to a station at Terra Nova Shopping Center (also discussed in Section 6.3). The interstate is significantly higher than the surrounding development area at Terra Nova requiring major structural elements to provide access. The station design and the alignment will need to address this vertical differential.
- A small drainage way lies between the Terra Nova Shopping Center and the interstate right-of-way. This drainage area will need to be investigated to determine if there are any significant environmental issues that need to be addressed.
- Access onto the interstate from East Palomar Street is another engineering feature needed to address access to the interstate. A drop ramp is needed to provide access to the interstate at this transition point and the vertical differences are significant. There are currently no access ramps at East Palomar Street.
- To accommodate the managed lanes and the access ramps to East Palomar Street it may require widening this portion of I-805. This widening may also affect the existing bridge on East Palomar Street that spans I-805.

▪ **East Palomar Street - I-805 to Heritage Road**

- The narrow right-of-way on East Palomar Street from Oleander Avenue to I-805 will not create any significant engineering issues to implement the proposed priority measures.
- No significant environmental issues appear to be associated with this portion of the alignment either. There will be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes.
- Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

▪ **East Palomar Street – Heritage Road to Freeway Oriented Commercial**

- The rest of the alignment area east of Heritage Road on East Palomar has few engineering requirements that will impede the implementation of the alignment.
- The 694 will be able to travel within existing dedicated median transit lane. However, as the alignment approaches SR-125 through Otay Ranch Village 6 it will have to cross over the toll road to enter the Freeway Oriented Commercial site in Otay Ranch. This will require an elevated structure for the transit vehicles.
- Mid-block stations in this segment of the alignment could present safety issues for pedestrians. Intersections closest to the mid-block median stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.

▪ **Freeway Oriented Commercial to University or Village 9**

- With the use of dedicated transit lanes within already proposed transit medians there are no significant engineering issues for this portion of the alignment.
- No significant environmental issues appear to be associated with this portion of the alignment. There will be no major improvements or right-of-way acquisitions needed to implement the dedicated median running transit lanes.
- Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.
- Mid-block stations in this segment of the alignment could present safety issues for pedestrians. Intersections closest to the mid-block median stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.

▪ **University or Village 9 to SR-125**

- It is anticipated that the 694 will continue to travel within dedicated median transit lanes from Village 9 to SR-125. This area is currently being planned by the City of Chula Vista and Otay Ranch with the provision to continue the dedicated transit lanes to SR-125. A portion of the alignment will also be shared by the RC-1 alignment.
- Transit service tying into the proposed University within Village 9 is an important element for this segment. Further study is needed to determine how best to serve this proposed activity center (including the proposed University) and still be able to transition onto SR-125 and the Spine Road.
- If mid-block stations are used in this segment of the alignment it could present safety issues for pedestrians. Intersections closest to the mid-block median stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.
- Transition to SR-125 will need to occur within this segment. It is anticipated that the transit vehicles will use the proposed on-off ramps south of the Village 9 at a possible interchange with SR-125. Further co-ordination will be needed with the City of Chula Vista, MDTB, Otay Ranch, and California Transportation Venture (SR-125) to determine how the 694 interfaces with SR-125 at this location.

▪ **SR-125 and SR-905 to the Otay Mesa Border Crossing**

- The traffic congestion levels on this segment of SR-125 and SR-905 are not significant and allow for mixed-flow transit lanes to be utilized.
- Provision for widening the rights-of-way to allow transit stations have not been provided by either of this proposed state routes. Discussion with Caltrans (SR-905), California Transportation Ventures or CTV (SR-125), and adjacent property owners should begin to assure that future transit station requirements can be met (this is further discussed in *Section 6.3*).



## **E. Feasibility of Priority Treatment Implementation**

### ***Near Term (2010) and Long Term (2020)***

Provisions for dedicated transit lanes have already been planned for the proposed roadway network outside of the freeway. Based on preliminary plans that have been prepared for portions of the Village 1, 5, 6, the Freeway Oriented Commercial site (PA-12), the Eastern Urban Center (PA-12) and Village 9 University planning areas in Otay Ranch the feasibility for implementing the alignment is high. However, it should be noted that the transit alignment through Village 9 is still being determined by all the different parties involved. The final alignment and transition to SR-125 needs to be established providing direct access to the village's primary activity center and SR-125.

Mixed-flow transit lanes will be used for a major portion of the alignment. This use of mixed-flow transit lanes will also ensure that the feasibility of the alignment can be implemented easily.

The major implementation hurdle for the 694 will be the I-805 corridor. Implementing the 694 alignment in the near term along I-805 may be feasible if Caltrans will allow the use of freeway shoulder lanes for transit. However, the transit lanes associated with I-805 may have to be in conjunction with the proposed Managed Lanes improvements identified in SANDAG's Mobility 2030 Regional Transportation Plan. This may be the best near and long term strategy for the portion of the route that uses I-805.

## **F. Conclusions**

The majority of the physical constraints and congestion areas occur on or around I-805. The rest of the alignment route is fairly free of congestion and physical limitations that will inhibit implementation of the priority measures. Congestion levels will not allow for mixed-flow travel lanes on I-805. The width of I-805 is fairly well contained from Plaza Boulevard to East Palomar Street and any expansion for dedicated transit lanes could require major capital investments for improvements.

Proposed improvements to I-805 include the implementation of four (4) managed lanes and an increase to 8 travel lanes from the project boundary north to SR-905. These improvements are outlined in SANDAG's Mobility 2030 "The Transportation Plan for the San Diego Region" dated February 2003. The 694 alignment proposes to travel on I-805 corridor and should coordinate with these proposed improvements in the study area from Plaza Boulevard to East Palomar Street. This coordination will allow an opportunity for shared capital cost.

## 6.3 STATION LOCATION AND TYPES

### A. Plaza Boulevard and I-805 Station

It is anticipated that the Plaza Boulevard and I-805 station will function both as a park and ride facility and a "walk-up" for transit riders. Direct pedestrian access will be needed to the station from the surrounding neighborhood and from the park and ride facility.

The location for this station's platform is proposed within the middle of the freeway's right-of-way just south of Plaza Boulevard on 16<sup>th</sup> Street as shown in **Figure 6.9**. Alternative locations were studied at Plaza Boulevard and were determined not as conducive. Alternative plans are illustrated in **Figures 6.10 and 6.10A**. The station at 16th Street provides the best pedestrian connection to the station and an appropriate sized area for a park and ride facility. The location will be accessed by the managed lanes proposed for I-805 which will allow for an avoidance of the congestion that typically occurs at Plaza Boulevard interchange.

#### ▪ Right-of-Way Requirements

The station will be an above-grade platform located in the center of the I-805 and leveled with 16<sup>th</sup> Street. The area needed for the station platform will be similar in configuration to that identified in **Figure 1.5**. Pedestrian circulation will access the station via 16<sup>th</sup> Street. The park and ride facility will be located to the west of the freeway as shown in **Figure 6.9**.

Currently, there is insufficient width available for the construction of a transit station at I-805 with the proposed managed lanes. The maximum width requirements for a typical station and the managed lanes will be approximately 102-feet including:

- Two (2) 12 feet for an managed travel lane with 8-foot shoulders and 4-foot buffer,
- 24 feet for transit lanes in each direction at the station area platform,
- Two (2) 15 foot pedestrian platforms.

The current right-of-way for I-805 does not appear to have this additional width available thus requiring a significant expansion of the freeway right-of-way.

Given the nature and location of this station it is anticipated that a park and ride facility of approximately 200 cars will also be needed to initially support the transit system, as illustrated in **Figure 6.9**. The park and ride facility could be a shared facility depending on the final land uses developed near the site. The park and ride facility will require approximately 2.0 acres in order to provide transfer capabilities for other transit services

#### ▪ Land Use Integration

##### Existing (1999)

The current uses in the area are comprised of primarily commercial uses along the Plaza Boulevard corridor. Residential uses are located to the north and south of this corridor and within the station's ¼ mile radius and are typical single-family developments (see **Figure 6.11**). Currently there are numerous vacant properties

adjacent to the freeway that has the potential for mixed-use development. These vacant properties could also be developed as a possible park and ride facility.

### ***Proposed (2020)***

The 2020 proposed land use within the station's ¼ mile radius will continue to be primarily commercial within the Plaza Boulevard corridor and with residential development at the fringe of the radius as illustrated in **Figure 6.11**.

### ***Opportunities***

The provision for a mixed-use component near or at this station will be more transit supportive than simply having the proposed commercial uses. A mix of land uses such as office, commercial, or multi-family residential should be included to increase the potential for additional transit riders. Mixed-uses or even multi-uses at or near the station will create opportunities for higher pedestrian activity, increased transit ridership, and reduce the need for the station's parking requirements.

The mix of uses should still contain predominantly retail or service commercial uses facing Plaza Boulevard with a significant percentage of the land area being devoted to residential uses as illustrated in **Figure 6.11**. Although the land area for the residential and commercial uses could be small their densities should be high enough to be transit supportive.

### ▪ ***Access***

The best location for the station, in the "long term," will be in the middle of the freeway at-grade with 16<sup>th</sup> Street. This will allow the alignment to maintain its travel speeds while continuing to provide the reliable service associated with a Red Car alignment.

Providing direct "front-door" service to the adjacent land uses may not be feasible with the station's proposed location and the other alignments traveling the I-805 corridor. Therefore, it will be important to provide direct and safe pedestrian access from the station location to the surrounding mixed-use developments, neighborhoods, and the park and ride facility as illustrated in **Figure 6.12**.

### ▪ ***Plaza Boulevard and I-805 Station Issues***

For the proposed Plaza Boulevard Station located at 16<sup>th</sup> Street the following are possible issues affecting the implementation of station improvements.

#### ***Engineering Issues***

- Drop ramps are needed to access the median type station located at 16th Street. The drop ramps will occur in the median of I-805 and outside of the proposed managed lanes.
- The use of drop ramps, the proposed managed lanes and the station requirements, will require a significant widening of Interstate I-805. It may also require the relocation of the freeway on and off ramps to Plaza Boulevard.
- Pedestrian access will need to be either improved or provided to ensure safe access to the station from the surrounding community and the proposed park and ride facility.

- Acquisition of private land for a park and ride facility will be needed. Vehicle access to this facility will also need to be provided.

***Environmental Issues***

- Land use impacts may be associated with the widening of the freeway and with the placement of the park and ride facility in an existing residential area.
- A traffic, circulation and parking study may be needed to assess possible impacts associated with the circulation patterns, increased traffic, and parking needs associated with the park and ride facility.
- A noise study may be needed to address freeway noise being closer to the residential areas.

***Community Issues***

- The community may not fully support the proposed park and ride facility in their neighborhood.
- Opposition from the community may also occur with the widening of the freeway to accommodate the proposed station, managed lanes, and drop ramps.



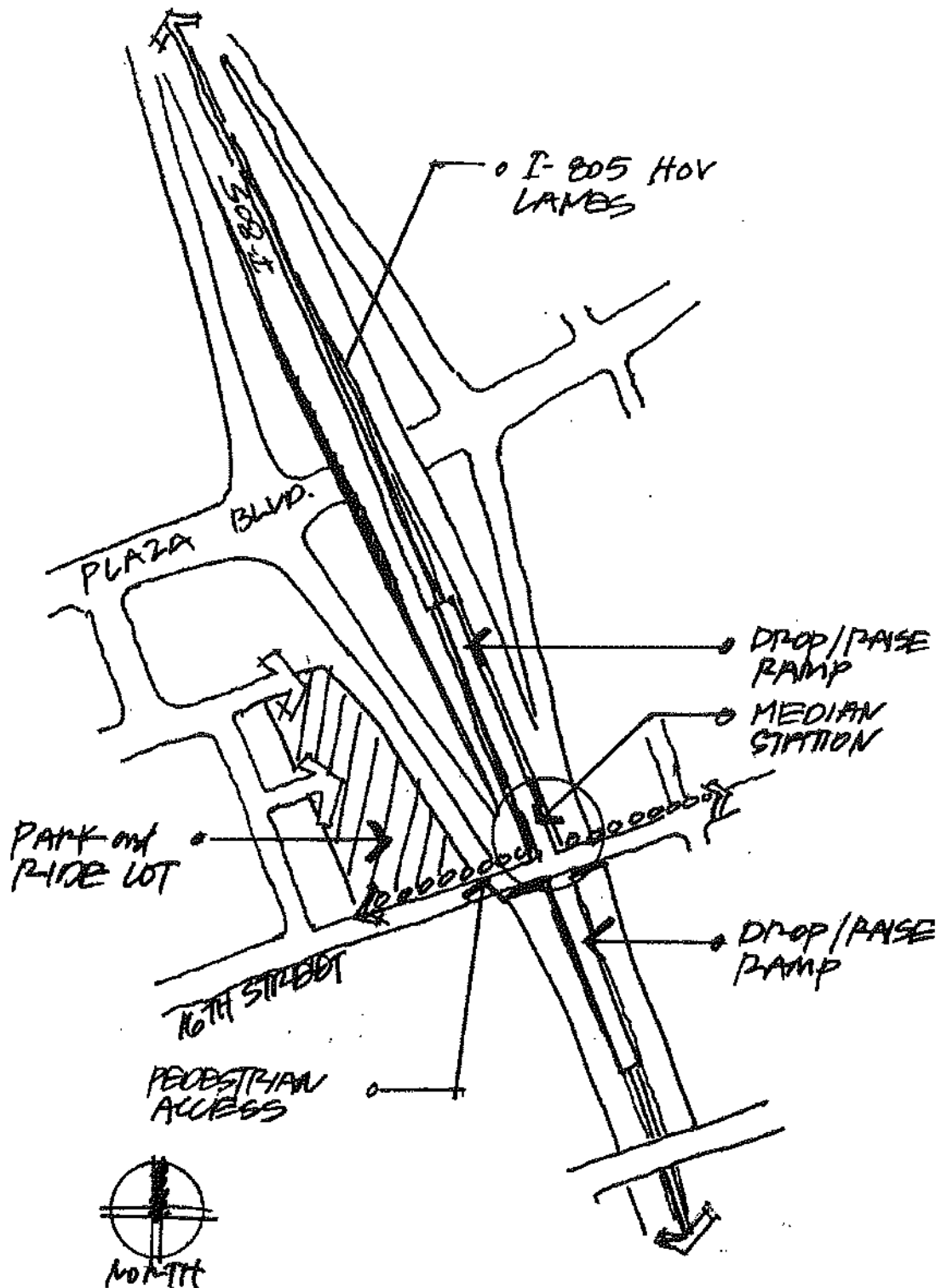


Figure 6.9  
Plaza Boulevard Station Preferred Location

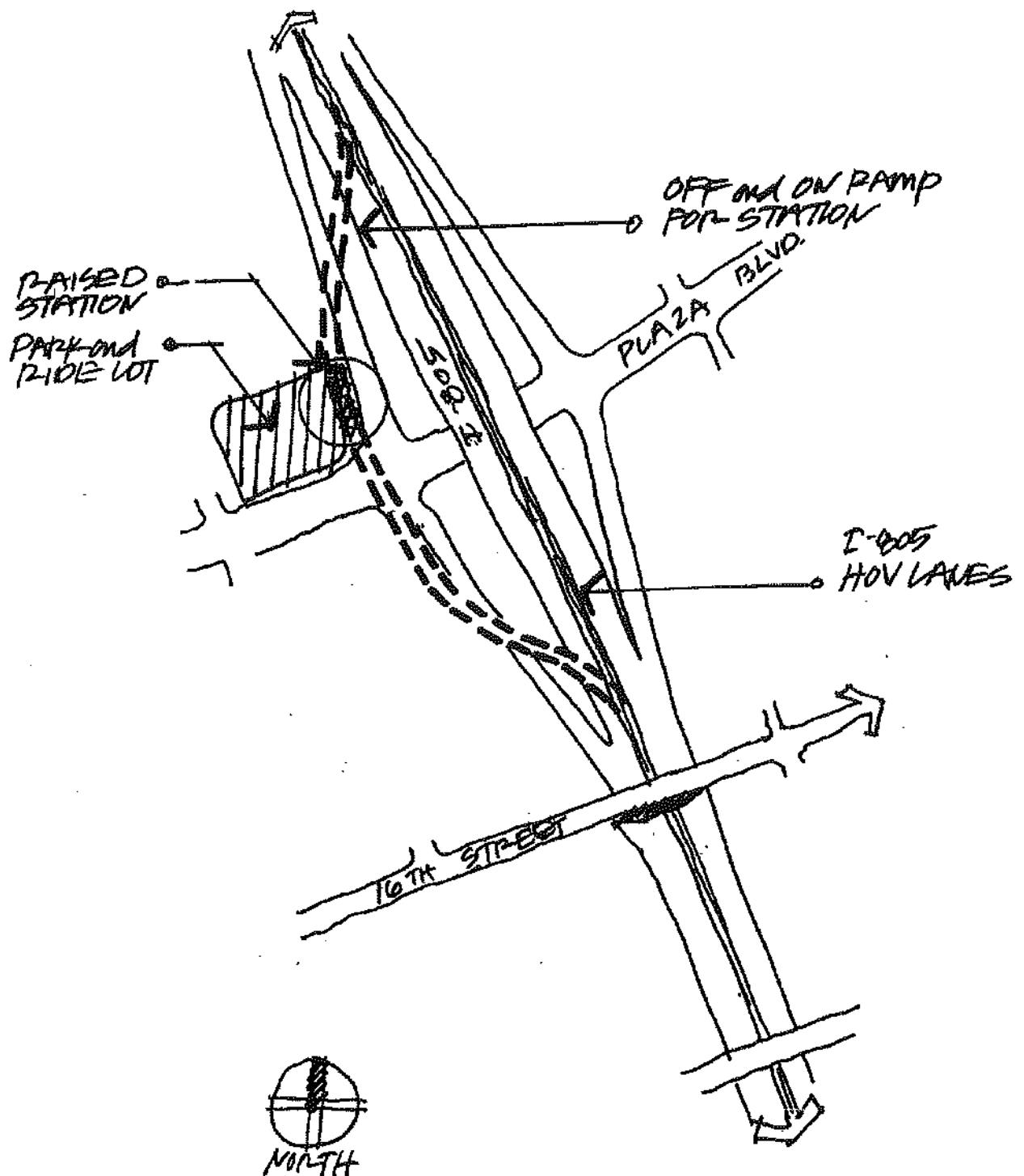


Figure 6.10  
Plaza Boulevard Station Alternative A Location

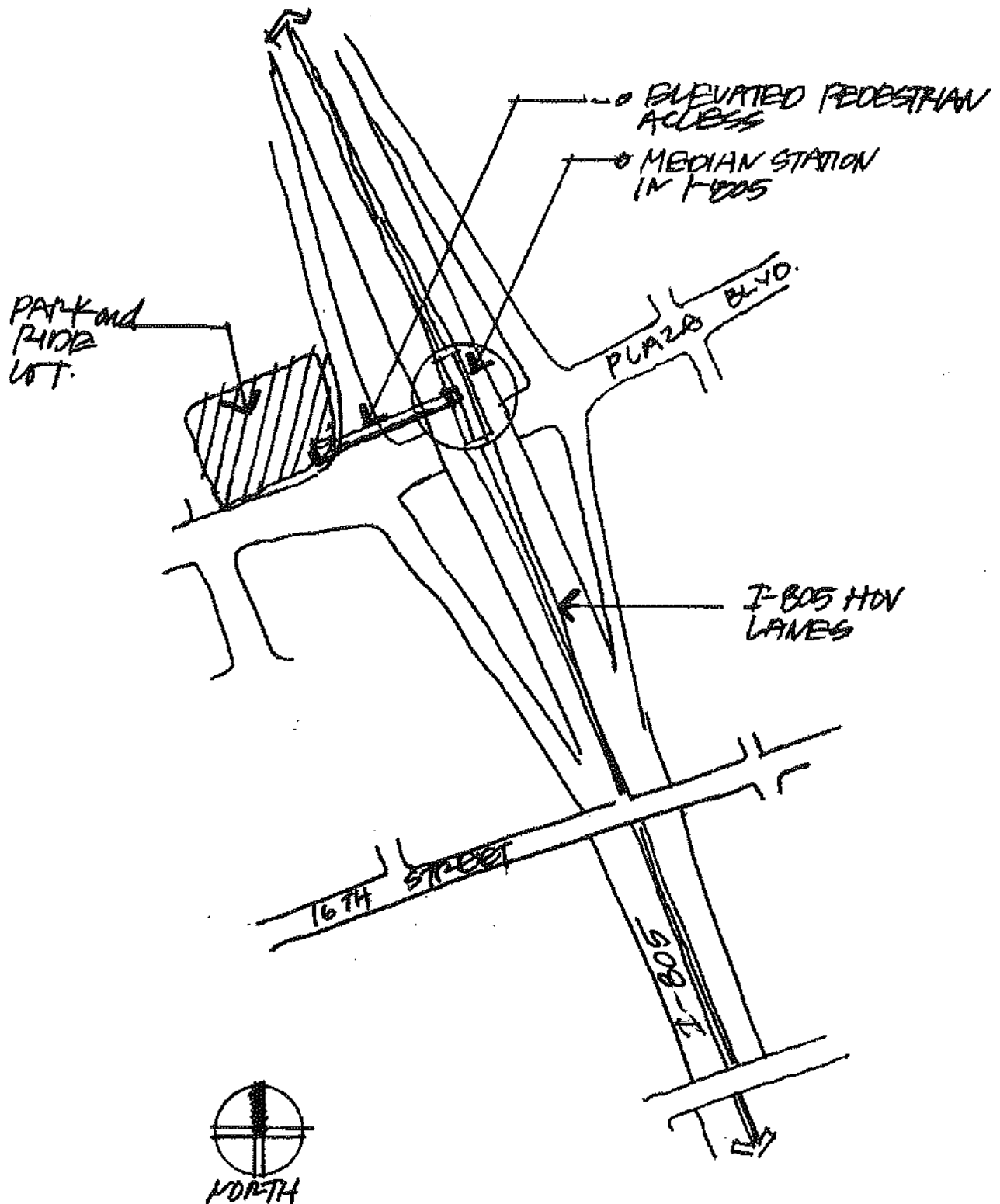
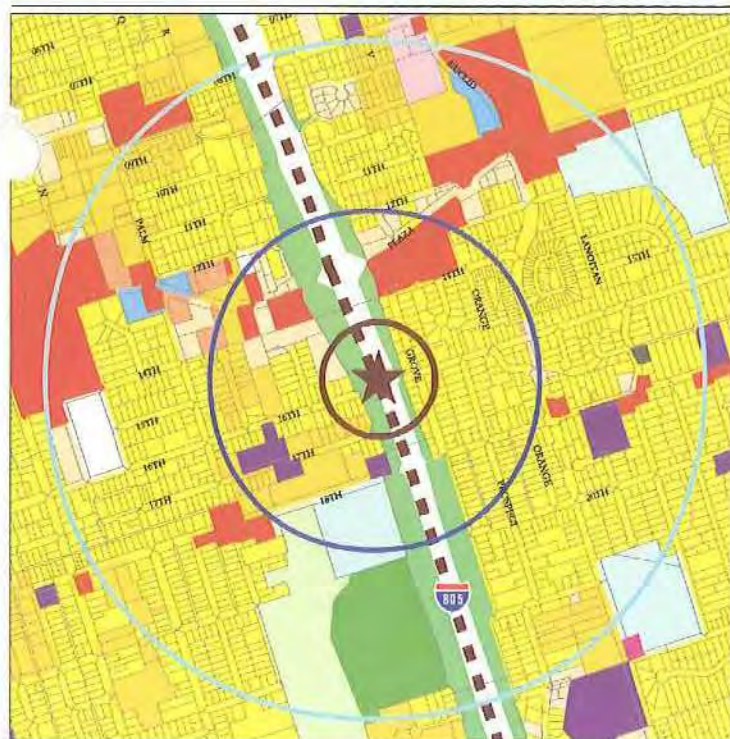


Figure 6.10A  
Plaza Boulevard Station Alternative B Location



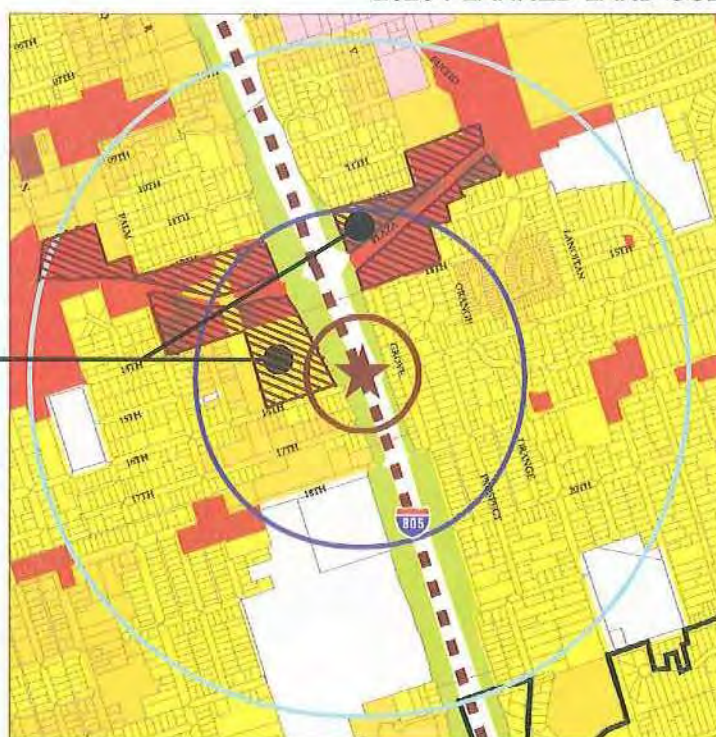
EXISTING LAND USE



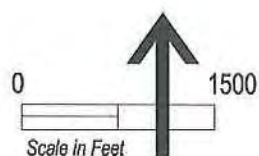
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES



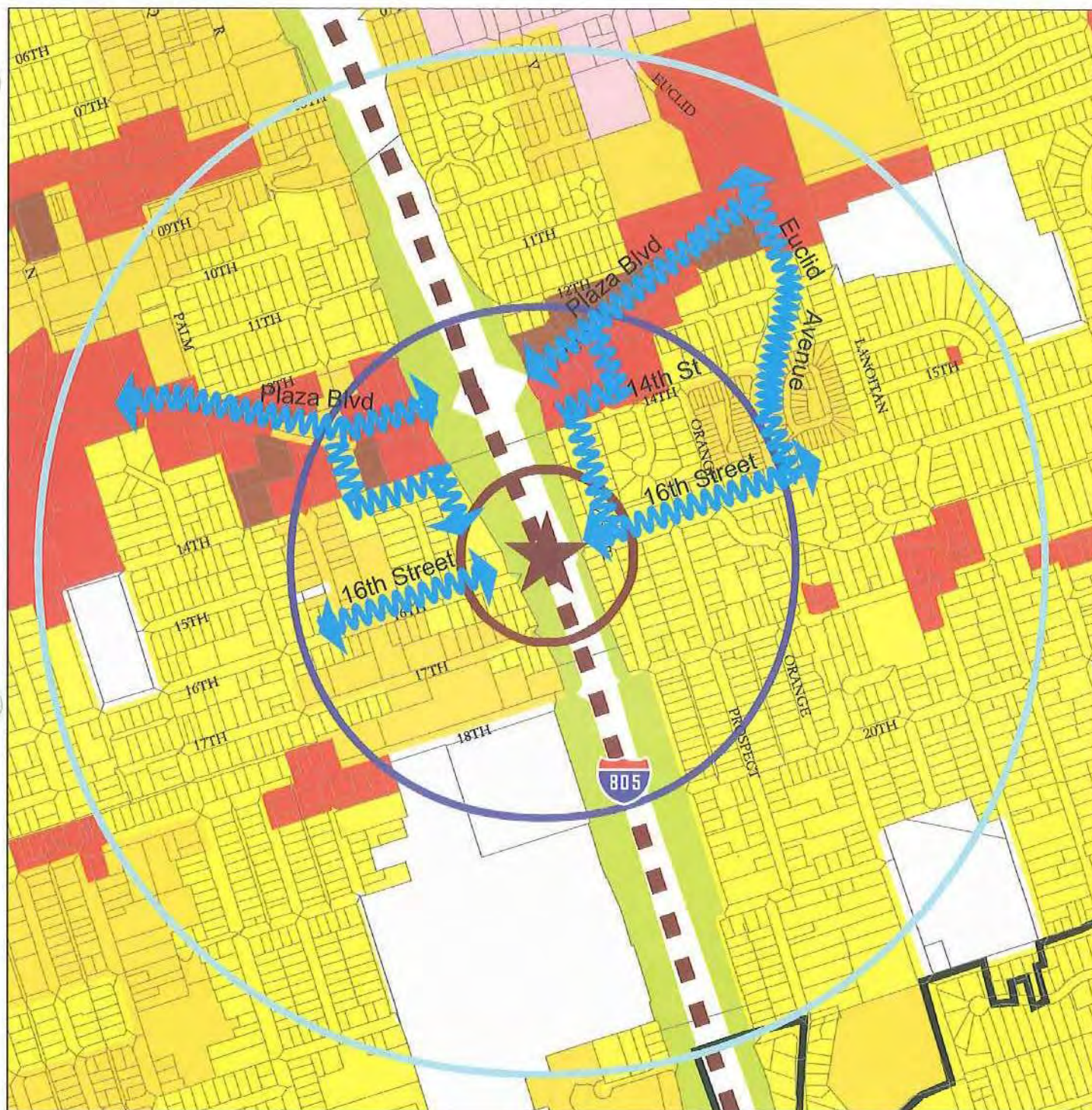
## LAND USE LEGEND

- |                             |                         |
|-----------------------------|-------------------------|
| ⊙ Car Station               | Office Lo-Rise          |
| — Car Service               | Religious Facilities    |
| 1/4 Mile Buffer             | Other Public Services   |
| 1/2 Mile Buffer             | Hospitals / Health Care |
| Single Family Residential   | Other Health Care       |
| Multi Family Residential    | Elementary Schools      |
| Other Group Quarters        | School District Offices |
| Hotel/Motel                 | Other School            |
| Freeways / Roads            | Golf Courses            |
| Communications / Utilities  | Parks                   |
| Retail and Strip Commercial | Landscape Open Space    |

- Open Space Reserves/Preserves
- Vacant / Undeveloped
- Mixed Use

**Figure 6.11**  
**694 Alignment**  
**Plaza Boulevard and Interstate 805 Station**



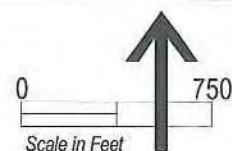


Station Location

694 Alignment



Pedestrian Access to Station



**Figure 6.12**  
**694 Alignment**  
**Plaza Boulevard and Interstate 805 Station**



## **B. Plaza Bonita - State Route 54 and Interstate 805 Station**

The Plaza Bonita station should be located between the west end of the Plaza Bonita Shopping Center and east of the Sweetwater River channel. This station will accommodate numerous alignments including the 694 and the 680. Transit vehicle access from the Managed Lanes will require significant “fly-over” structures in order to connect the station to I-805, as illustrated in **Figure 6.13**. The station will be best served as a park and ride facility because of its isolation from the surrounding community. This station will also need to provide transfer opportunities from the local Blue Car service

### ▪ **Right-of-Way Requirements**

The station will be considered an Off-street or Transit Hub similar to that illustrated in **Figure 1.5**. The overall requirements include approximately 2 to 2.5 acres in size allowing for transit platforms, transfer area for Red Car and Blue Car service and a park and ride facility of 200 cars. However, the station should also take advantage of future walk-up patrons when the site is redeveloped

### ▪ **Land Use Integration**

#### **Existing (1999)**

The area adjacent to the proposed station is fairly well developed. The existing land uses includes a regional shopping center (Plaza Bonita), low density residential and the Sweetwater River channel open space corridor as illustrated in **Figure 6.14**.

#### **Proposed (2020)**

The 2020 proposed land use within the station's ¼ mile radius will continue to include the existing land uses as illustrated in **Figure 6.14**. The uses will not be significantly different since the area is already highly developed.

#### **Opportunities**

The opportunity for redevelopment comprised of a mixed-use component near the station is feasible at or near the Plaza Bonita Shopping Center. Plaza Bonita Shopping Center will be an ideal location for a mixed-use development that will be highly transit supportive, as illustrated in **Figure 6.14**. The inclusion of medium to high density residential uses and even office uses with the regional commercial center will increase the potential for additional transit riders.

This location is also being proposed as a potential “Smart Growth” site in SANDAG's 2030 RTP Mobility Emphasis Draft Network. With this in mind the ability to achieve a development intensity to allow for greater density should be feasible.

### ▪ **Access**

Providing direct “front door” access will be feasible in this location since the alignment will transition off of the freeway's managed lanes to enter the proposed station. The future redevelopment of the Plaza Bonita Shopping Center could bring the proposed land uses close to the station providing direct pedestrian access. The location of this station is somewhat isolated from the surrounding community. However, the success of this station will rely initially on the park and ride facility and an anticipated increase in future “walk -up” patrons from the shopping center's redevelopment, as illustrated in **Figure 6.15**.

▪ **Plaza Bonita –SR 54 and I-805 Station Issues**

For the proposed station located at Plaza Bonita Shopping Center the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- Access the station from I-805 (north bound or south bound) is the most significant engineering issue for this station. South bound transit vehicle will have to travel on a new ramp or “fly-over” system that will connect to Plaza Bonita Road. The location of this ramp is critical so that there are no conflicts with the other ramps.
- For north bound transit vehicles the off ramp will begin prior to Bonita Road. The ramp or “fly-over” will then transition to Plaza Bonita Road prior to bridge spanning the Sweetwater River. The transit vehicles will then use the Plaza Bonita Road Bridge to cross the river.
- It is anticipated that these new ramps will take place at the same time that the managed lanes will be implemented in the I-805. At the time the entire ramping system with SR-54 and I-805 will be under-going redesign.
- After reaching Plaza Bonita Road it is recommended that the 694 travel in mixed-flow traffic lanes to reach the station.
- Discussion with the owners of Plaza Bonita Shopping center should be initiated as soon as possible to discuss their concerns for the station’s specific location. Placement of the station should be located where it has the least impact on the shopping center. However, the station should also provide the “front door” service that will be appropriate when the site is redeveloped.

***Environmental Issues***

- The primary environmental issue at this station is the Sweetwater River and ensuring that there are no impacts requiring significant mitigation. Creating new crossings over the river should be avoided if possible. This is reflected in the proposed access concepts to the station.
- The south bound access ramp is located to the north of the river in an area that that the vegetation appears to be in “ruderal” or disturbed condition. Further analysis needs to be completed to insure that no significant or sensitive vegetation is located in this area.
- A traffic study may be needed to assess possible traffic impact due to the circulation patterns, transit priority measures, and the increase traffic associated with the park and ride lot.
- A visual quality analysis may be necessary to assess any visual impacts associated with the “fly-over” ramps and views to Public Open Space areas.
- Geotechnical studies will also be required for the “fly-over” ramp construction.

***Community Issues***

- It is anticipated that the primary community issue will be the location of the station within the Plaza Bonita Shopping Center. As stated earlier, discussions with the property owner should be initiated to establish the specific location of the station,

future redevelopment plans, and to determine the best method for acquiring the land needed for the transit station.

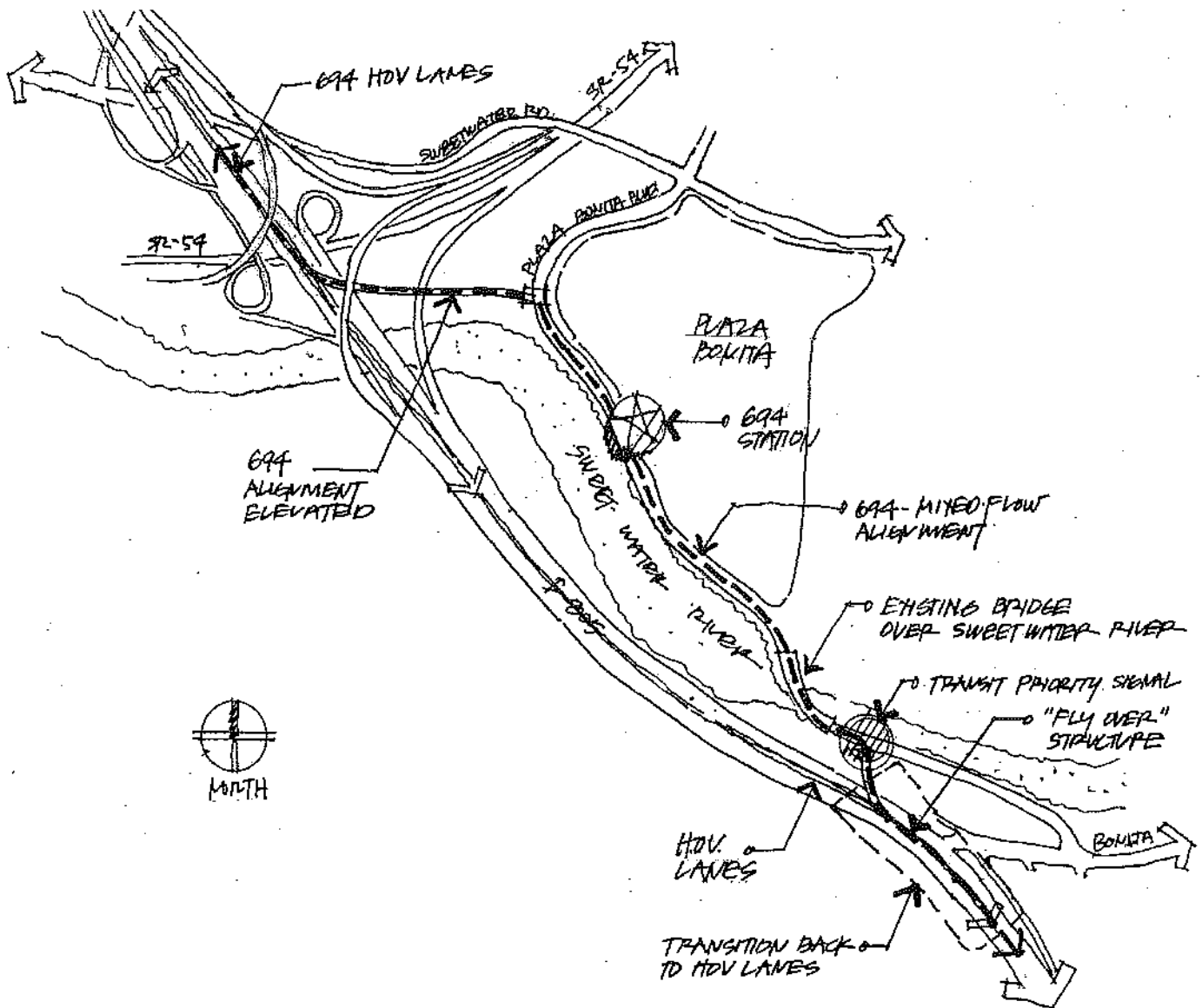


Figure 6.13  
Plaza Bonita Station Location





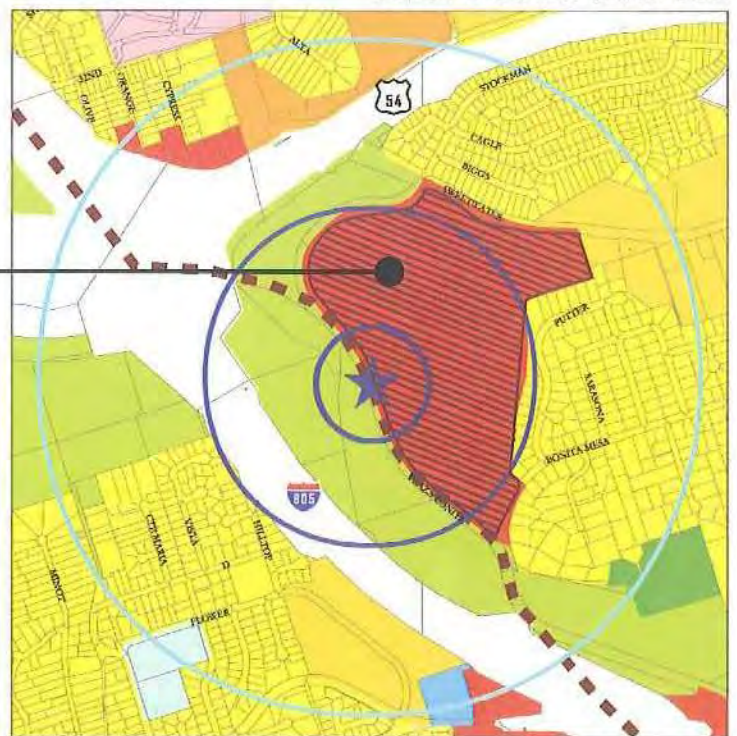
EXISTING LAND USE



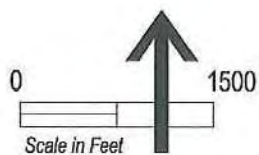
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES



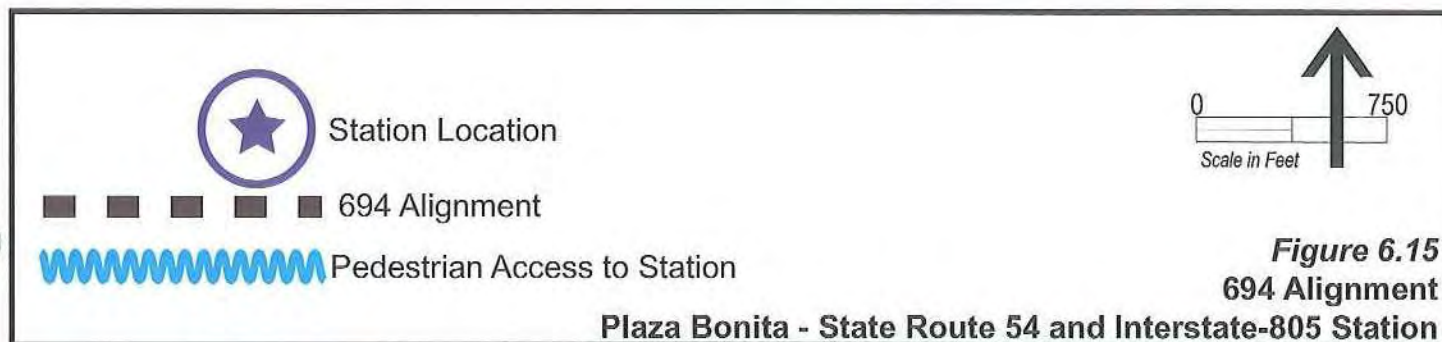
## LAND USE LEGEND

- |                             |                             |
|-----------------------------|-----------------------------|
| ★ Car Station               | Other Recreation            |
| --- Car Service             | Parks                       |
| 1/4 Mile Buffer             | Landscape Open Space        |
| 1/2 Mile Buffer             | Open Space Reserve/Preserve |
| Single Family Residential   | Vacant / Undeveloped        |
| Multi Family Residential    | Undeveloped                 |
| Mobile Home Parks           | Hospitals - General         |
| Other Group Quarters        | Water Bodies                |
| Freeways / Roads            |                             |
| Retail and Strip Commercial |                             |
| Cemetery                    |                             |

Plaza Bonita - State Route 54 and Interstate-805 Station

Figure 6.14  
694 Alignment





### C. H Street Station at Interstate 805 (Terra Nova Station)

The H Street Station at I-805 will be located in conjunction with the Terra Nova Shopping Center. This is a major transfer station that will need to accommodate numerous transit alignments including the 680 and also the 627. The 627 is an east/west alignment traveling on the H Street corridor. This station will also need to provide transfer capability for the local Blue Car service and a park and ride facility of a minimum 100 vehicles.

In order to accommodate both the north/south and east/west transit alignments, the best location for this station is proposed as close to the southeast corner of I-805 and East H Street. However, physical constraints due to the existing retail center service area and the area's topography may make this a difficult design solution.

A station located at-grade in the middle of I-805 and south of H Street may be more feasible. The station will require elevated pedestrian access to the Terra Nova Shopping center, as shown in **Figure 6.16**. This location will remove the station away from the heavily congested interchange and will tie into the proposed park and ride facility located behind the Terra Nova Shopping Center. More site-specific studies will be needed to establish the best location for the other uses supporting the station.

#### ▪ **Right-of-Way Requirements**

The 694 H Street station is proposed to be located in the center of the I-805 at the same grade as the freeway. Vertical circulation will be provided for the passengers to access the park and ride facility that will be located east of the freeway behind the Terra Nova Shopping center as shown in **Figure 6.17**.

Currently, there is insufficient width available within the I-805 right-of-way. The construction of a transit station at-grade with the proposed managed lanes will require a maximum width of approximately 102-feet, as shown in **Figure 1.4 of Chapter 1** of this report, and includes:

- Two (2) 12 feet wide managed travel lanes
- Two (2) 8-foot wide shoulders with 2- 4-foot wide buffers,
- 24 feet for transit lanes in each direction at the station area platform,
- Two (2) 15 foot wide pedestrian platforms.

The current right-of-way for I-805 does not appear to have this additional width thus requiring a significant expansion of the freeway right-of-way.

Given the nature and location of this station it is anticipated that a park and ride facility of approximately 100 cars will also be needed to initially support the transit system. The area near or adjacent to the park and ride facility will also need to provide transfer capabilities for other transit services.

- **Land Use Integration**

**Existing (1999)**

The area adjacent to the proposed station is comprised of the Terra Nova Shopping Center and is fairly well developed. There are provisions with the Terra Nova Shopping Center and the City of Chula Vista to provide for a future park and ride facility within the development. However, the location of these parking stalls and the proposed station will need to be worked out. The other existing land uses near the station include, low to medium density residential development, a school site (Hilltop High School) on the west side of I-805, and open space as shown in **Figure 6.17**.

**Proposed (2020)**

The 2020 proposed land use within the station's  $\frac{1}{4}$  and  $\frac{1}{2}$  mile radius will continue to include the existing land uses previously mentioned. The uses will not be significantly different since the area is already highly developed.

**Opportunities**

This station location will benefit with an additional mix of land uses, particularly residential uses, within close proximity to the station site. This additional mix of land uses will require future redevelopment of Terra Nova Shopping Center. If additional uses are not provided this station's ridership will potentially rely more on the park and ride facility and also the transfer capabilities at the station.

- **Access**

"Front-door" service will not be feasible without significant redevelopment of the Terra Nova Shopping Center. However, future retail development could occur in conjunction with the station providing a more attractive and vibrant pedestrian experience.

Strong pedestrian connections should also be provided to the surrounding residential communities to attract additional ridership as shown in **Figure 6.18**. As illustrated in **Figure 6.18**, East H Street is extremely wide in this area. The six-lane arterial and its landscaped median contribute to long and difficult pedestrian crossings. Pedestrian crossings at East H Street will need to be addressed in order to make the area more conducive to pedestrians and to provide safe pedestrian connections to the proposed station.

The waiting environment at the station should also be a consideration in final design. Due to the station's location in the middle of the freeway, the potential waiting environment could be unpleasant, which may lead to fewer transit patrons. Care should be given to ensure that the waiting environment is safe, pleasant and convenient.

- **H Street at I-805 (Terra Nova) Station Issues**

For the proposed H Street Station at I-805 the following are possible issues affecting the implementation of station improvements.



**Engineering Issues**

- The use of the proposed managed lanes and the station requirements will require a widening of Interstate I-805. It may also require the relocation of the freeway on and off ramps to H Street.
- An elevated pedestrian access is needed to be provided safe access to the station from the surrounding area including the proposed park and ride facility located at Terra Nova Shopping Center.
- Clear identification of the park ride location at the Terra Nova Shopping Center needs to be developed. Vehicle access issues to the park and ride will need to be addressed and pedestrian connections will need to be developed.
- Coordination with the 627 Station location will be important to the overall success of this 694 station. It is anticipated that there will be a strong transfer relationship between these two alignments.

**Environmental Issues**

- A traffic, circulation, and parking study may be needed to assess possible impacts to local streets and the freeway due to the proposed station and its requirements.
- A visual quality analysis may be necessary to assess any visual impacts associated with the elevated pedestrian crossing.
- The "wait environment" at this station needs to be carefully treated. Not only should safety standards be addressed but also the waiting environment. The station should be pleasant within the median of a freeway as patrons wait for the transit vehicles to arrive.

**Community Issues**

- It is anticipated that the main community issue will be the location of the station's park and ride facility within the Terra Nova Shopping Center. Although an agreement with the shopping center for a park and ride facility exists the specific location has never been clearly identified.
- Discussions with the property owner should be initiated to establish the specific location of the park and ride, future development plans, and to determine the best pedestrian circulation to the both the 694 and also the 627 station.

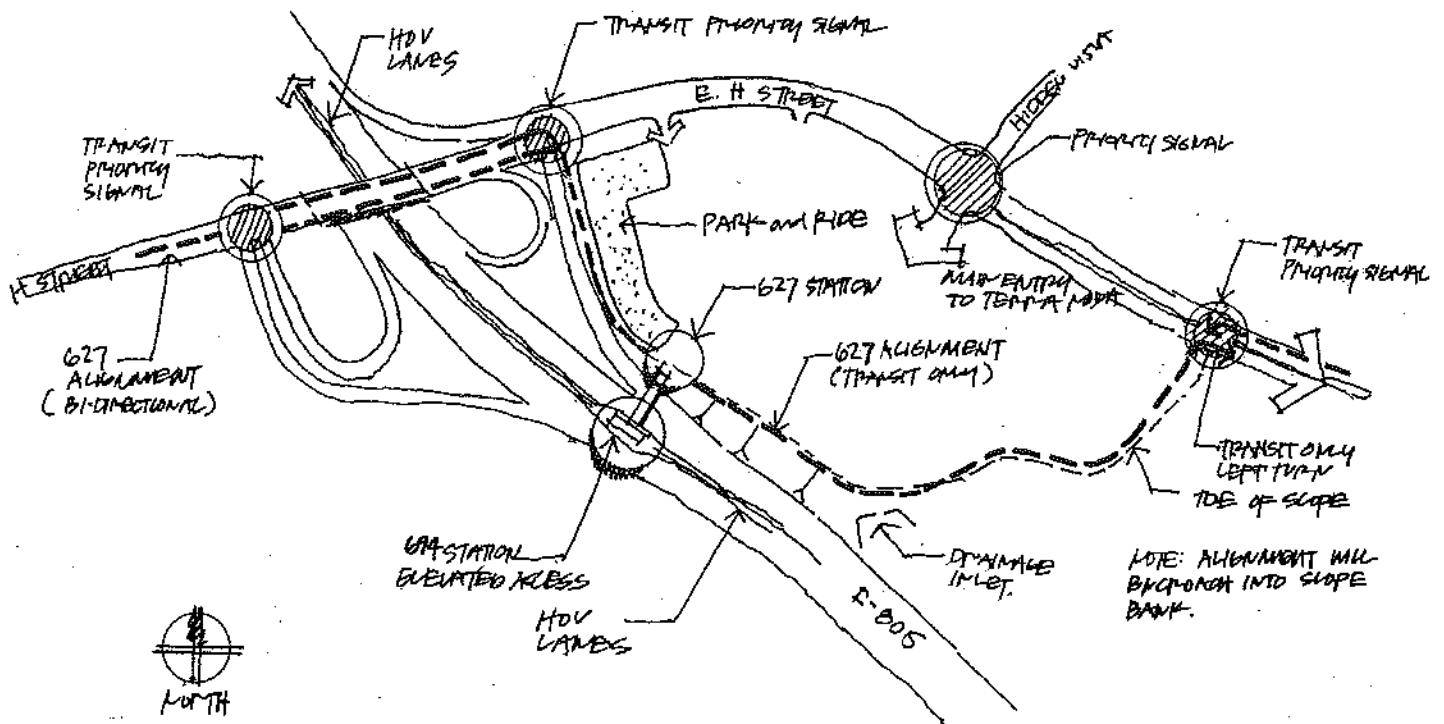


Figure 6.16  
H Street and Interstate 805 Station Location



EXISTING LAND USE



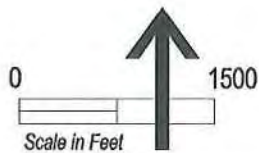
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Commercial (Primary)
- Residential (Secondary)
- Office (Tertiary)



OPPORTUNITIES

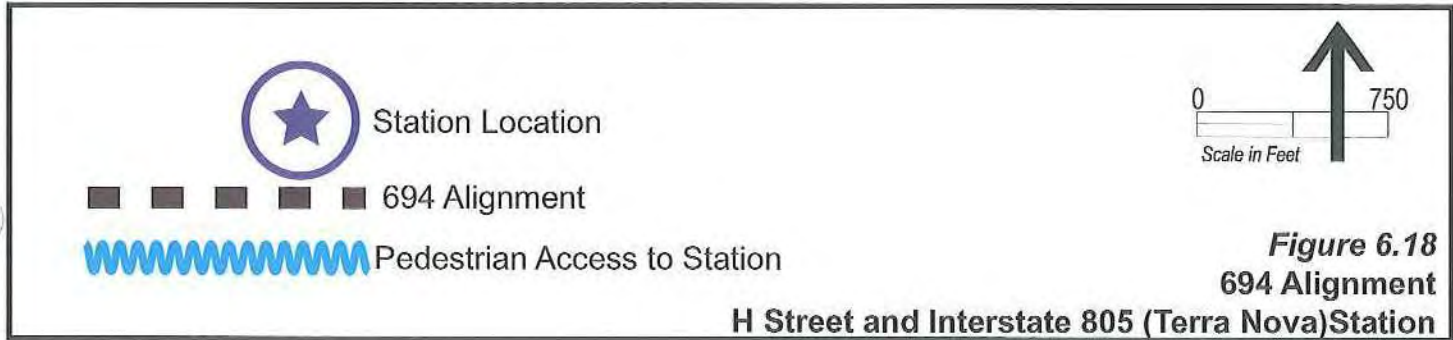
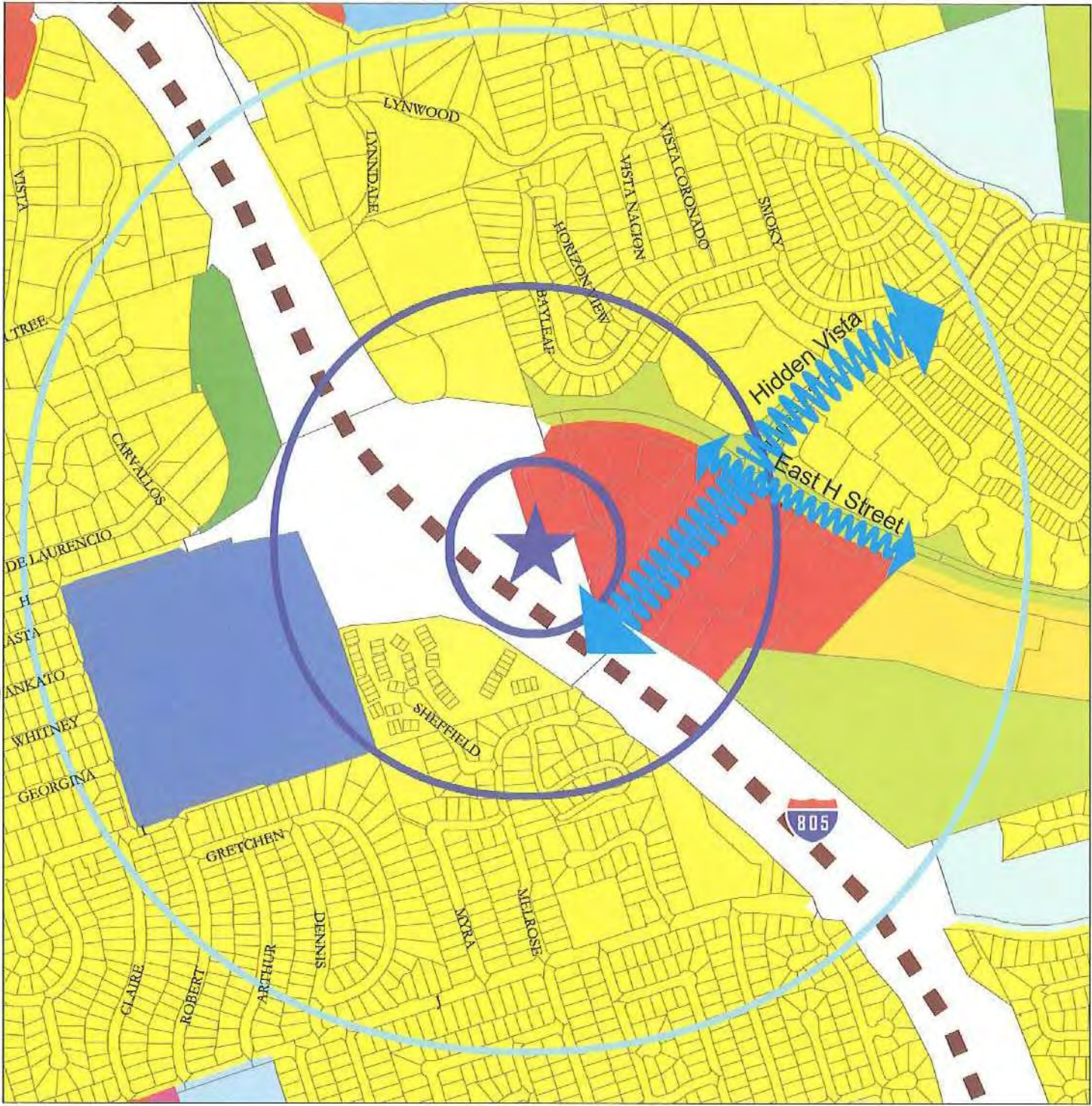


## LAND USE LEGEND

- |                             |                                      |
|-----------------------------|--------------------------------------|
| (*) Car Station             | Office Lo-Rise                       |
| - - - Car Service           | Religious Facilities                 |
| 1/4 Mile Buffer             | Senior High Schools                  |
| 1/2 Mile Buffer             | Elementary Schools                   |
| Spaced Rural Residential    | Parks                                |
| Single Family Residential   | Open Space Reserves/Preserves        |
| Multi Family Residential    | Landscape Open Space                 |
| Hotel/Motel                 | Residential Recreation               |
| Freeways / Roads            | Agriculture / Orchards and Vineyards |
| Communications / Utilities  | Vacant / Undeveloped                 |
| Retail and Strip Commercial |                                      |

**Figure 6.17**  
**694 Alignment**  
**H Street and Interstate 805(Terra Nova) Station**







#### **D. East Palomar Street and Medical Center Drive Station**

The East Palomar Street and Medical Center Drive station will require a park and ride facility to accommodate patrons in eastern Chula Vista wanting to travel towards downtown San Diego. A park and ride facility is needed to accommodate the high ridership potential. The station is the first stop on the alignment after leaving the proposed I-805 managed lanes. The station location should provide a park and ride facility as well as have the potential to serve "walk-up" transit patrons. Three sites were identified in this general location to serve the area and are illustrated in **Figures 6.19A-6.19C**.

- **Alternative A** - the first site that was reviewed is located next to I-805 at Raven Avenue. The park and ride lot will use the utility easement to the north of East Palomar. The site could provide direct access from East Palomar or from Raven Avenue as shown in **Figure 6.19A**. Pedestrian access will be provided directly from the proposed parking lot to the stations located on East Palomar Street.

Although this location is an ideal location for a park and ride lot, its potential to serve "walk-up" transit patrons is not very strong. The surrounding area is dominated by low density single-family residences. Also, pedestrians traveling from west of I-805 will perceive the freeway as a barrier. Additionally, there are no significant activity centers within ¼ mile of this location.

- **Alternative B** - the second site is located at Oleander Avenue and East Palomar Street. The park and ride lot could be a shared parking facility with the Boy's Club located just north of East Palomar Street. Negotiations with the Boy's Club will be necessary to determine if a shared parking facility will be an acceptable arrangement. The stations will be located on East Palomar Street and direct access from the parking lot will be provided as illustrated in **Figure 6.19B**. A slight change in elevation will exist between the station and the parking lot which should be taken into consideration when providing access to the stations.

The surrounding uses are comprised of low-density single-family residences, a park (Greg Rogers Park), the Boy's Club and an elementary school. These uses are not considered as strong transit supportive type uses.

- **Alternative C** - the third site investigated is located at Medical Center Drive and East Palomar Street. The park and ride lot could be developed on the southeast corner as illustrated in **Figure 6.19C**. This location will provide direct pedestrian access from the park and ride lot to both curbside stations. This site is currently undeveloped and faces directly onto East Palomar Street. Environmental considerations should be given to the site as there appears to be some natural vegetation that could be considered sensitive.

This site offers a good location for the park and ride lot and has the best potential for walk-up opportunities. Located within a ¼ mile of this station are higher density residential uses and a major employment base in the Sharp Chula Vista Medical Center. These types of uses provide for a higher level of transit ridership.

Of the three sites that were reviewed the site located at Medical Center Drive (Alternative C) is the preferred station location. This site has the potential to provide a park and ride facility within close proximity to the curbside stations and is also surrounded by land uses that will provide for greater "walk-up" opportunities.

▪ **Right-of-Way Requirements**

Based on the priority treatments for East Palomar Street the stations are proposed as curbside stations. The right-of-way requirements will be 15-feet x 150-feet similar to those shown in **Figures 1.6** in Chapter 1 of this report. This accommodates a 15-foot boarding and alighting platforms and the length will serve multiple transit vehicles.

East Palomar Street has a wide landscape parkway that will easily accommodate the station platforms. No additional right-of-way is anticipated as most of the station platform improvements can be implemented within the existing right-of-way. The park and ride facility for this station should accommodate approximately 200 vehicles. This will require approximately 1.8 to 2 acres that will need to be acquired for the parking lot as illustrated in **Figure 6.19C**.

▪ **Land Use Integration**

**Existing (1999)**

The predominant land uses in the area are identified as low to medium density residential uses with small area devoted to commercial, institutional, and schools uses as illustrated in **Figure 6.20**. The recently developed uses that are in close proximity to the proposed stations include single-family and multi-family homes, a commercial center, and a medical facility to the northeast.

**Proposed (2020)**

Because of the already urbanized nature of the proposed station location the 2020 land uses located within the station's ¼ mile radius are similar to the existing uses identified in the 1999 plan. Predominate land uses in 2020 will continue to be residential with commercial uses located near the existing major arterials streets and shown in **Figure 6.20**.

**Opportunities**

Because of the area's recent development the intensification of more transit supportive uses may not occur in the near future. The redevelopment of the commercial area located on the northeast parcel of East Palomar Street and Medical Center Drive may be the best opportunity for a transit supportive use at this location. The site could be developed as a mixed-use site incorporating residential uses as illustrated in **Figure 6.20**.

▪ **Access**

The station location is well sited to take advantage of the surrounding and varied land uses. The pedestrian environment is currently pleasant, direct, safe, and provides for good accessibility to the station. This is especially true along East Palomar Street and Medical Center Drive and Brandywine Avenue. Recent streetscape improvements to these roads make for an excellent pedestrian experience.

▪ **East Palomar Street and Medical Center Drive Station Issues**

For the proposed station located at East Palomar Street and Medical Center Drive the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- There should be no significant engineering issues associated with this station. The station platforms should be able to utilize existing right-of-way and the landscape setbacks on both sides of East Palomar Street.
- The park and ride facility will be located on an empty parcel on the southeast side of East Palomar Street and Brandywine Avenue. Research should be done to determine who owns the property and any restriction associated with the property.
- Access to the park and ride facility will need to be located so as not to interfere with the existing intersection. It is anticipated that access will come off of Brandywine Avenue.

***Environmental Issues***

- A traffic, circulation, and parking study may be needed to assess possible impacts to local streets and access due to the proposed station's park and ride facility.
- Land use impacts may be associated with the placement of the park and ride facility in an existing residential area.
- The site identified for the park and ride facility should be reviewed for any sensitive biological species. The site is fairly disturbed and does not appear to have any significant biological habitat.

***Community Issues***

- The community may not fully support the proposed park and ride facility in their neighborhood.

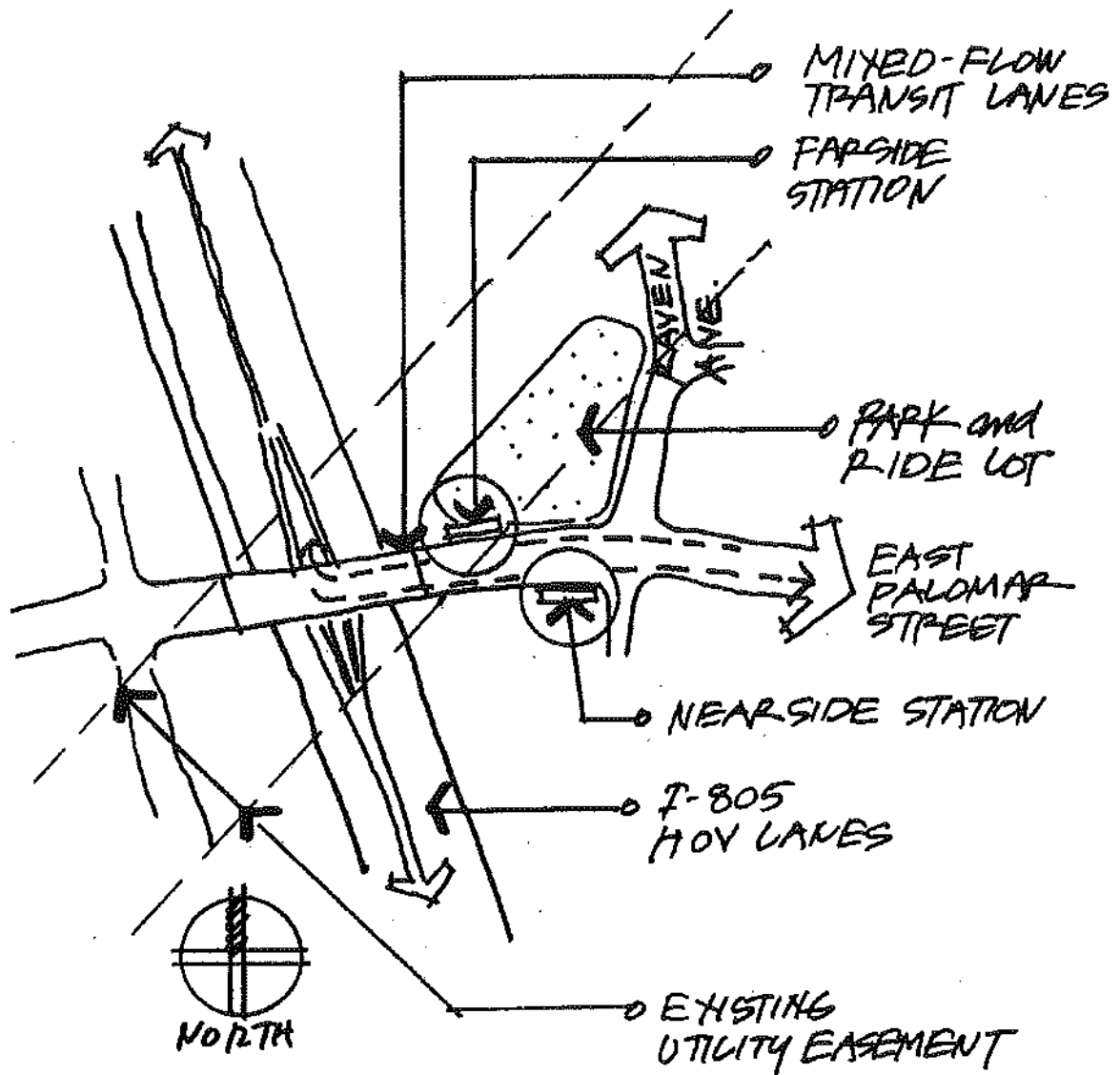


Figure 6.19A  
East Palomar Street / Raven Avenue Station Location



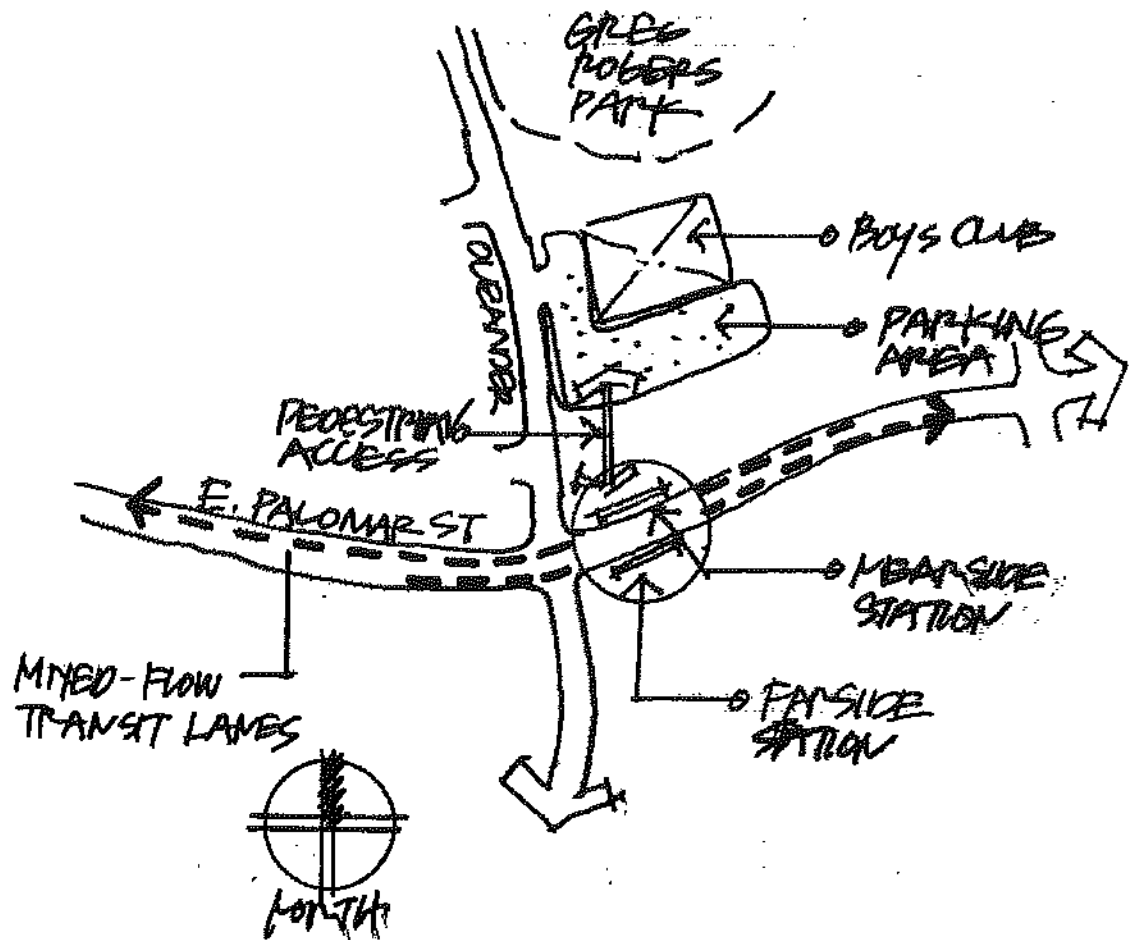


Figure 6.19B  
East Palomar Street / Oleander Avenue Station Location

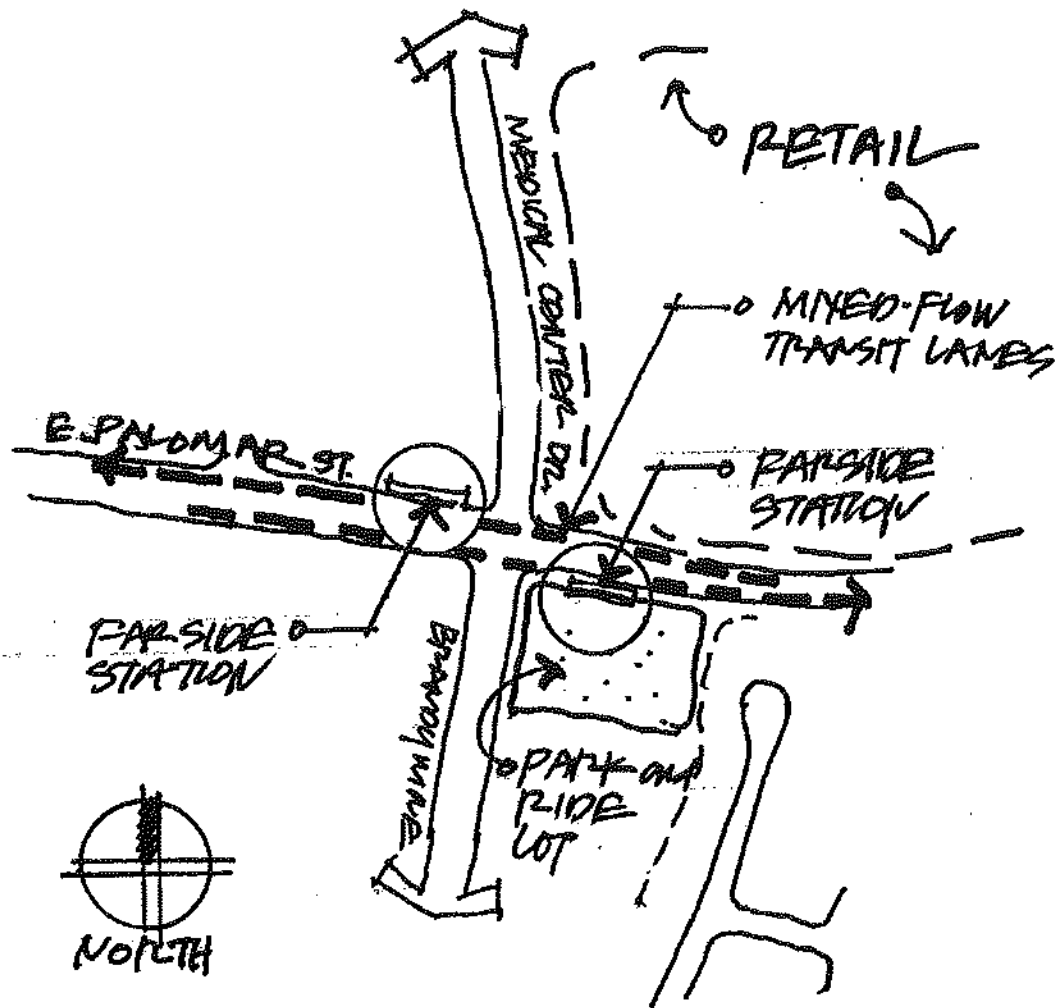


Figure 6.19C  
East Palomar Street / Medical Center Drive Station Location



EXISTING LAND USE



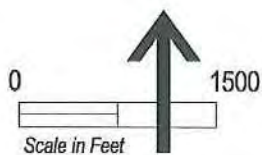
2020 PLANNED LAND USE

Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES



LAND USE LEGEND

- |                            |                               |
|----------------------------|-------------------------------|
| (*) Car Station            | Other Public Services         |
| - - - Car Service          | Elementary Schools            |
| 1/4 Mile Buffer            | Other Recreation              |
| 1/2 Mile Buffer            | Parks                         |
| Single Family Residential  | Open Space Reserves/Preserves |
| Multi Family Residential   | Vacant / Undeveloped          |
| Freeways / Roads           | Retail and Strip Commercial   |
| Communications / Utilities | Undeveloped                   |
| Parking Lots               | Hospitals - General           |
| Office Lo-Rise             |                               |
| Religious Facilities       |                               |

**Figure 6.20**  
**694 Alignment**  
**East Palomar Street and Medical Center Drive Station**





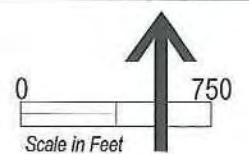
Station Location



694 Alignment



Pedestrian Access to Station



**Figure 6.21**  
**694 Alignment**

**East Palomar Street and Medical Center Drive Station**



**E. Village 1 – Heritage Village Otay Ranch**

Provisions for the Heritage Village Station have been set aside by the area's recent development. The station will be located at-grade within the existing transit median. The boarding and alighting platforms will be located on the outside edge of the transit median.

- **Right-of-Way Requirements**

No additional right-of-way requirements will be needed

- **Land Use Integration**

Heritage Village was recently developed as a Transit Oriented Neighborhood. The land uses associated with the station location already include the wide range of transit supportive uses. These uses include medium density residential developments, an employment center; commercial and recreational uses. No additional recommendations are proposed at this time

- **Access**

The station location is well sited to take advantage of the surrounding and varied land uses. The pedestrian environment is pleasant, direct and provides a connection to the station for transit users.

- **Village 1- Heritage Village Otay Ranch Station Issues**

No significant engineering, environmental, or community issues are anticipated that will affect the station improvements for the proposed Village 1 Station in Otay Ranch. It should be noted that the mid-block median type station could present safety issues for pedestrians. Intersections closest to the mid-block stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.

**F. Village 5 Station**

Provisions for the Village 5 Station have been set aside by the area's recent development. The station will be located at-grade within the existing transit median located on East Palomar Street. The boarding and alighting platforms will be located on the outside edge of the transit median.

- **Right-of-Way Requirements**

No additional right-of-way requirements will be needed

- **Land Use Integration**

This station is located in an area that is currently being constructed or is in the latter planning stage. Existing, proposed and recommended land use integration will be provided by the City of Chula Vista for future implementation. No additional recommendations are proposed at this time.

- **Access**

The station location is well sited within the village to take advantage of the surrounding and varied land uses. The pedestrian environment is pleasant and direct and will provide good connections for transit patrons walking to the station.

- **Village 5 Station Issues**

No significant engineering, environmental, or community issues are anticipated that will affect the station improvements for the proposed Village 5 Station in Otay Ranch. It should be noted that the mid-block median type station could present safety issues for pedestrians. Intersections closest to the mid-block stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.

**G. Village 6 Station**

Provisions for the Village 6 station have been included for as part of the area's project development. The station will be located on-grade within the proposed transit median located on East Palomar Street. The boarding and alighting platforms will be located on the outside edge of the transit median.

- **Right-of-Way Requirements**

No additional right-of-way requirements will be needed

- **Land Use Integration**

This station is located in an area currently being constructed or is in the latter planning stage. Existing, proposed and recommended land use integration will be provided by the City of Chula Vista for future implementation. No additional recommendations are proposed at this time.

- **Access**

The station location is well sited within the village to take advantage of the surrounding and varied land uses. The pedestrian environment is pleasant and direct and will provide good connections for transit patrons walking to the station.

- **Village 6 Station Issues**

No significant engineering, environmental, or community issues are anticipated that will affect the station improvements for the proposed Village 6 Station in Otay Ranch. It should be noted that the mid-block median type station could present safety issues for pedestrians. Intersections closest to the mid-block stations should have well marked crossings to allow for safe and clear pedestrian access to the station platform and to discourage mid-block crossing by transit patrons.

## **H. Freeway Oriented Commercial (FOC) Station**

The proposed station will be situated within the Freeway Oriented Commercial (FOC) site and will have a "park and ride" component to accommodate approximately 200 cars. The current location identified by the FOC site developers is illustrated in **Figure 6.22**. The alignment will transition from SR-125 on a structural crossing to an at grade station.

The station will be located within the proposed parking lot of the commercial development and will be bordered on both the north and south sides by the park and ride parking area. It is anticipated that only one station location will be developed to serve both directions. The FOC station will be located within a median with boarding occurring on both sides of the median.

### ▪ **Right-of-Way Requirements**

The station right-of-way requirements will be approximately 54-feet by 150 feet. These requirements will accommodate 24 feet wide dual median running travel lanes with 15-foot boarding and alighting platforms located on both sides. The requirements will be similar to those shown in **Figure 1.9** in Chapter 1.

Provisions for the 200-space surface parking lot for the "park and ride" facility will be an integral part of the station requirements. The park and ride facility should be located as close to the station as possible and within easy viewing distance for the transit rider. The park and ride facility will require approximately 1.8 to 2.0 acres.

### ▪ **Land Use Integration**

#### **Existing Land Uses (1999)**

The FOC site is not developed to date but is currently being planned. The uses will be similar to the Proposed Land Uses for 2020. The current planning for this site will be comprised of a significant retail commercial center that has freeway exposure and access. Other uses could include commercial, hotel, and residential development adjacent to Olympic Parkway.

These types of commercial developments proposed rely heavily on freeway exposure and have significant parking requirements. A park and ride lot is identified for this site and the transit station can be appropriately integrated into the proposed FOC project.

#### **Proposed Land Uses (2020)**

See above.

#### **Opportunities**

It will be difficult to achieve the type of land use integration that is envisioned for Transit First at the FOC station. Modifying the type of land uses to allow for better integration and transit supportive capability is not feasible or practical. However, the station will benefit by attracting transit patrons from the multifamily projects within Village 11. Offering clear pedestrian access to this residential neighborhood should be considered as development plans are prepared.



▪ **Access**

The station location is well sited to take advantage of the proposed park and ride lot. The station should also recognize the surrounding and varied land uses outside of the FOC. Initially, this station will rely heavily on the park and ride component instead of the surrounding land uses and neighboring villages for its ridership. The pedestrian environment within the parking lots needs to be pleasant, direct and well defined if it is expected to serve those using the parking areas. A mid-block crossing to the station from the park and ride lot should be explored. However, this may require a pedestrian signal to stop traffic and allow a safe crossing for the transit patrons.

To encourage pedestrian access from surrounding neighborhoods, particularly Village 11, pedestrian improvements should encourage potential walk-up riders to pass through the large parking lots or use the public rights-of-way to the station.

▪ **Freeway Oriented Commercial Station Issues**

For the proposed FOC Station located in Otay Ranch the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- A median transit station will have to take pedestrian safety and accessibility into consideration. This may require some type of pedestrian activated signal that allows for a mid-block crossing.
- A transit priority signal will be needed to allow the transit vehicles to enter and exit the station. This signal may also be used to allow pedestrian crossings to the station.

**Environmental Issues**

- A traffic and circulation study may be needed to determine the impact a mid-block transit signal may have on the traffic flow along the "Spine Road."

**Community Issues**

- No significant community issues are anticipated at this station location.

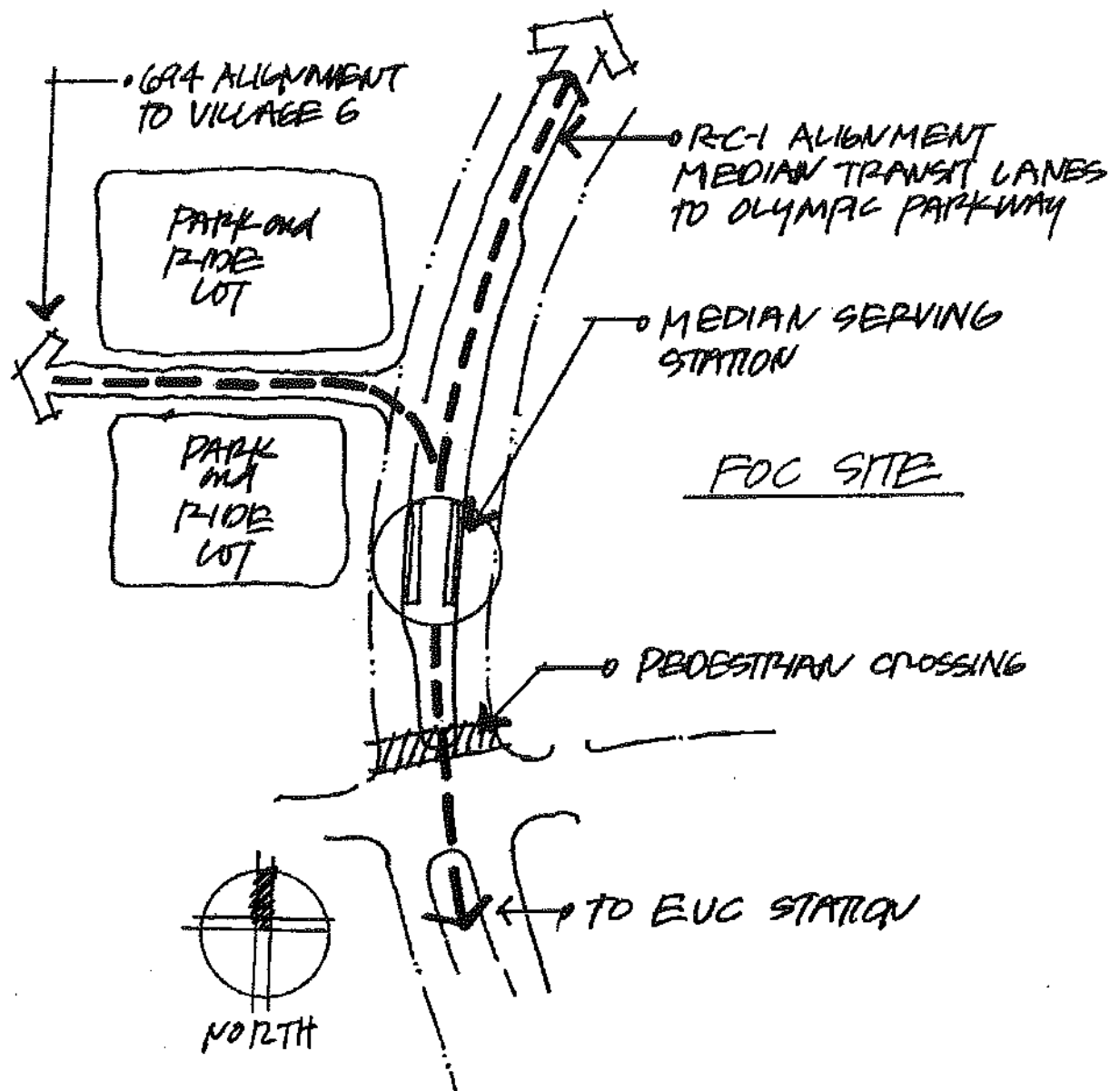


Figure 6.22  
Freeway Oriented Commercial Station Location

## **I. Eastern Urban Center (EUC) Station**

The Eastern Urban Center (EUC) station is intended to be situated within the middle of the EUC. The EUC is proposed as a major mixed-use center and will be comprised of a variety of intensive land uses. It is recommended that the proposed station location be an integral part of the EUC development site. The developers of the EUC site, City of Chula Vista, and MTDB should continue to work together to assure that the station is accommodated within this important development area. The transit alignment will be within a median running transit lane on the "Spine Road" which is being designed as a major north / south transit corridor.

### ▪ **Right-of-Way Requirements**

The station will have to accommodate multiple Red, Blue and Green Car alignments with transfer capabilities. This station should be considered as a major transit hub for the following alignments:

- *Tier 1: RC-1, 627, and 694*

Continued coordination and cooperation with the City of Chula Vista, the developer of the EUC, and MTDB are needed to ensure that the transit station requirements are met. MTDB should continue to provide site-specific design requirements for the developers, as the planning studies for the EUC are prepared

### ▪ **Land Use Integration**

The EUC site is currently being planned and the "existing" land uses will be similar to that shown in the proposed land use plan for 2020. The current planning efforts involve a significant mixed-use center that will be located adjacent to the proposed station site. The EUC mixed-use center is intended to be a major focal point for Otay Ranch and the region. The mix of land uses will be comprised of regional commercial, office, and residential uses. In addition, there is a significant amount of residential development proposed for Village 11, which is within ¼ mile of the EUC station. All of the above mentioned uses will be very transit supportive.

No additional land use recommendations are proposed at this time as planning studies are currently being prepared. Coordination efforts for the design of the station should continue with the developer of the EUC, City of Chula Vista, and MTDB. These coordination efforts will ensure that the mix of land uses, intensity of land uses and land use integration with the transit station occurs at this location.

### ▪ **Access**

The EUC Station location will be well sited to take advantage of the proposed mix of land uses and will provide "front-door" access. With final design, the pedestrian environment could be very strong, allowing transit riders to walk directly to many of the proposed uses. Care should also be given to allow for direct pedestrian access to Village 11

▪ **EUC Station Issues**

For the proposed EUC Station located in Otay Ranch the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- Bay and platform provisions for Green, Red, Blue and Yellow Car alignments sharing the station will be needed.
- The City of Chula Vista, MTDB and the developers will need to coordinate the needs and size of the station as the EUC is planned.

**Environmental Issues**

- No significant environmental issues are anticipated.
- A traffic study may be needed to assess the impact transit service has on local traffic.

**Community Issues**

- The EUC has always been planned as the location for a major transit hub. The planning process with the developer, MTDB, and the City of Chula Vista should continue to insure that the transit requirements are met. No significant community related issues for the station design are anticipated at this time.



## ***J. University or Village 9 Station***

The Village 9 Station will be located within the planning area of Otay Ranch where ongoing conceptual planning is being coordinated with the City of Chula Vista and Otay Ranch. Location of a transit facility or station in this area is being considered as part of the City's and the developer's planning efforts and will depend on the final outcome of their planning and circulation studies and the interchange locations for SR-125.

### ▪ **Right-of-Way Requirements**

The right-of-way requirements for each station should provide a minimum of 15-feet by 150-feet similar to those illustrated in **Figure 1.6** of Chapter 1.

### ▪ **Land Use Integration**

The Village 9 Station will be located in an area of Otay Ranch that is currently in the planning process. Existing, proposed and land use integration opportunities will be provided by the City of Chula Vista for future implementation.

### ▪ **Access**

Pedestrian access to the station will be taken into consideration during the planning process for this area.

### ▪ **University or Village 9 Station Issues**

For the propose Village 9 Station the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- At this time no significant engineering issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.
- The location of the SR-125 interchange that would serve Village 9 is proposed for Rock Mountain Road. As currently designed this location would require the transit station to be at the northern most edge of Village 9. This location would not serve the village activity center proposed for the center of the development. The alignment should travel through the planning area and access SR-125 at the southwestern edge of the development area. This would then require an interchange at this location to access SR-125. This location would be similar to the one previously proposed at Main Street and SR-125.

#### **Environmental Issues**

- At this time no significant environmental issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

#### **Community Issues**

- At this time no significant community issues are anticipated.

## **K. Lonestar Station**

The Lonestar Station should be located to best serve the surrounding land uses. The area surrounding the station is currently being developed and will be impacted by the planning and design of SR-125. The station should be located south of Lonestar Road and just south of the proposed toll booth as illustrated in **Figure 6.23**.

The station will rely heavily on "walk-up" transit patrons. Although this site could be well served by a park and ride facility, this concept may not be feasible since SR-125 will be a toll road. The developers of the toll road will want to maximize the revenues from the use of the roadway and may view any measures to increase transit ridership as a conflict with this goal.

- **Right-of-Way Requirements**

The station type depends on the design of SR-125, the surrounding land use development and the transit priority measures. Based on the priority treatments it is anticipated that there will be two "turnout" curbside type stations. One serving the north bound alignment and the other serving the south bound alignment.

The turnout station will require an area of approximately 30-feet x 150-feet as illustrated in **Figure 6.24**. Another consideration is the area necessary for the transit lanes transitioning "out of" and "back into" the freeway travel lanes. The length for this transition could be as long as 1,000-feet in each direction requiring a total of 4,000 linear feet for both stations. It appears that the proposed stations will be located outside of the existing roadway right-of-way.

However, it should be noted that a Light Rail line is proposed on the east side of the toll road. If there is dedicated right-of-way for this alignment it may not require additional acquisition of property for the east side station. The station on the west side of the toll road may need to acquire additional right-of-way.

- **Land Use Integration**

The Lonestar Station will be located in an area that is currently in the planning stage. Existing, and proposed opportunities for land use integration should be provided by the County of San Diego and the City of San Diego for future implementation. Special consideration should be given to developing site plans that allow for development to be in close proximity to the stations.

- **Access**

Pedestrian access from the station to the surrounding land uses should be a priority, as these areas are planned and developed. The ability to reach the stations directly and safely will increase the viability of transit to serve the area. A proposed underpass at Piper Ranch Road could be used to eliminate the need for an elevated crossing of SR-125.

▪ **Lonestar Station Issues**

For the propose Lonestar Station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- A pedestrian under-crossing is required for access both stations and to the surrounding land uses. This could occur at Piper Ranch Road.
- Additional right-of-way will be required for the transit station and ingress and egress to the station from SR-125. The length of these access lanes will need to take into consideration the access ramps needed for the toll booth.
- The transition lanes serving the station may require the underpass structure for Piper Ranch Road be extended. This will depend on final location of the station.
- Additional ridership information will be necessary to determine if a park and ride facility is needed or is feasible at this location.

***Environmental Issues***

- No environmental issues are anticipated at this time. However, with further site specific studies design issues may be identified.

***Community Issues***

- Acquisitions of additional rights-of-way from adjacent private land owners for station and station access may be required. Efforts should begin to discuss the requirements and needs as SR-125 is constructed.

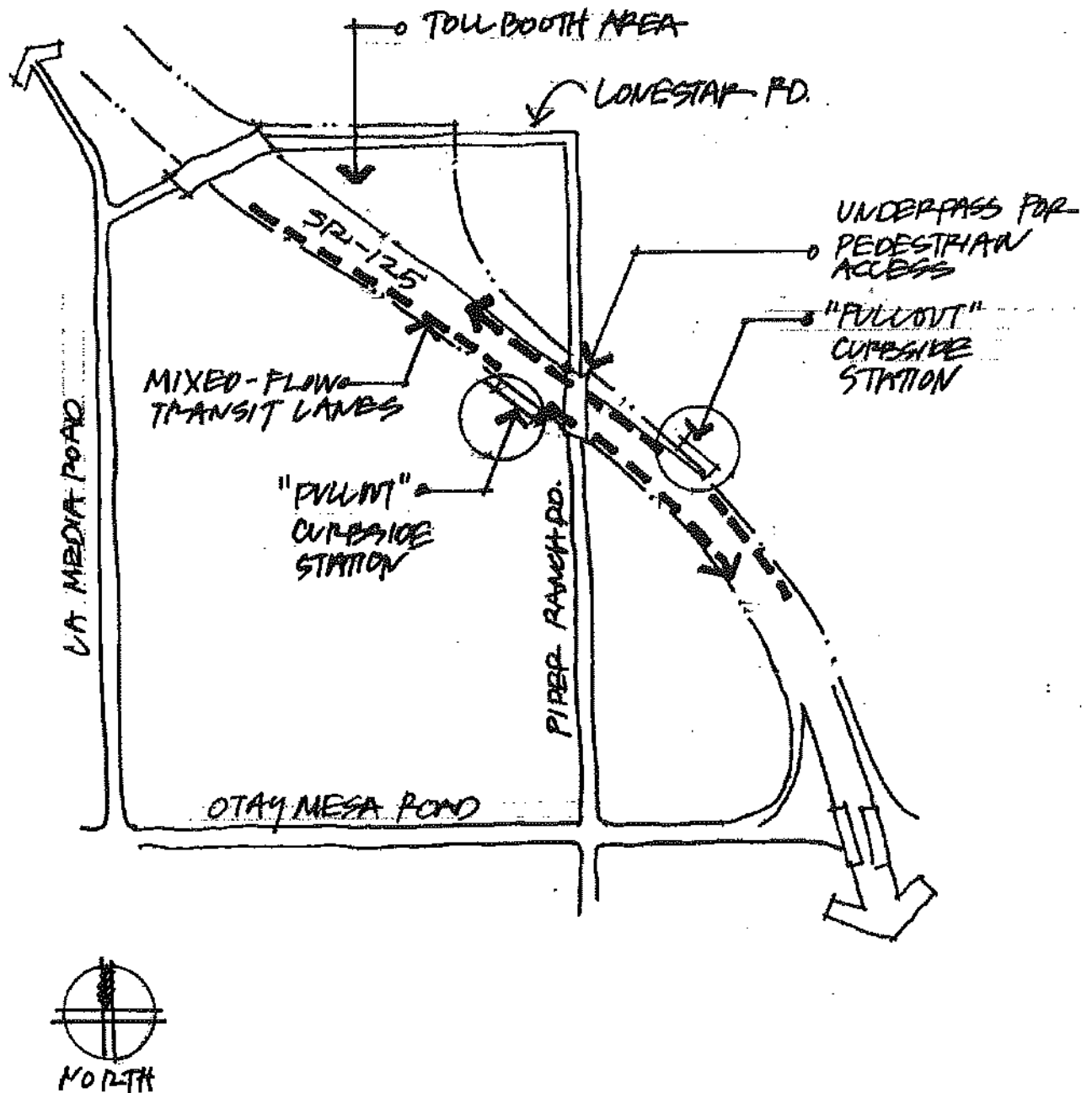


Figure 6.23  
Lonestar Station Land Use



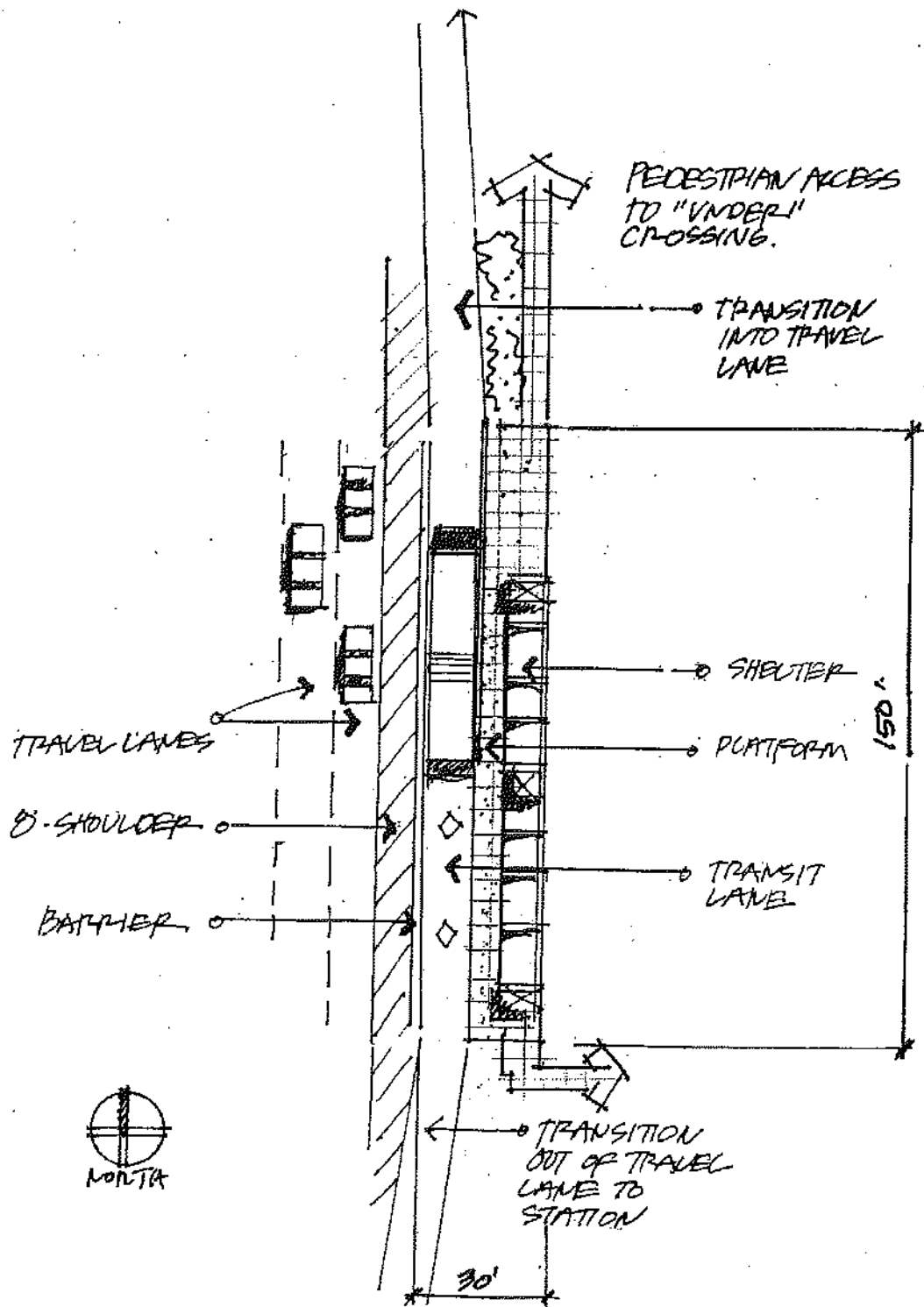


Figure 6.24  
Lonestar Station Type

## **L. Otay Mesa Road – Harvest Station**

The Otay Mesa Road and Harvest Station should be located in an area that will allow service for both the 694 and the 625 alignments and easy transfer opportunities. In order for these alignments to share a station, the station should be located south of SR-125 on the SR-905 as illustrated in **Figure 6.25**. Based on the priority treatments it is anticipated that there will be two “pull-out” curbside type stations. One station will serve the west bound alignment and the other station will serve the east bound alignment.

### ▪ **Right-of-Way Requirements**

The Otay Mesa Road and Harvest Station will require two (2) curbside stations, one for each direction, which will turn out from the proposed travel lanes. The station will be located outside of existing freeway right-of-way. However, it should be noted that a Light Rail line is proposed on the east side of the freeway. This may allow for the stations on the east side to be within this right-of-way and not require acquisition of additional property. Stations on the west side of the toll road may need to acquire additional right-of-way. The general area will require approximately 175-feet by 50-feet of land dedicated for each station as illustrated in **Figure 6.26**.

The transit lane at the station will have to transition back into the proposed travel lanes. The length of this transition could be as long as 1,000 feet in each direction requiring a total of 4,000 linear feet for the both station platforms. Also, since these stations will be located near the on/off ramps for SR-125 and SR-905 the final station locations and design should take into account the northbound and southbound travel lanes.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use plan illustrates agricultural and vacant uses with a small area identified for industrial uses as shown in **Figure 6.27**. Currently there is significant industrial/warehouse type development occurring in the area. It is anticipated that this area will continue to be developed with this type of land use intensity into the near future.

#### **Planned (2020)**

The proposed 2020 land use plan illustrates changes in land use intensity with the addition of industrial park uses south of Otay Mesa Road and specific planning area north of Otay Mesa Road, as shown in **Figure 6.27**. As previously mentioned this type of development is already occurring.

#### **Opportunities**

The land use changes, as illustrated in the 2020 Land Use Plan, will help in supporting the proposed transit station. However, it may be appropriate to provide higher density type developments such as light-industrial or office uses closer to the stations. These uses should be located both the east and the west of SR-905 of the proposed station site as shown in **Figure 6.27**.

Light-industrial or office uses will also create additional transit supportive uses and will strengthen the "walk up" capability of the station. These future development opportunities should be located in close proximity to the stations. This will potentially allow for an integration of the station into the project design.

▪ **Access**

This area has the potential to become extremely pedestrian "un-friendly." With the transition of SR-905, SR-125 and Otay Mesa Road all occurring in this location it's important that pedestrian access not be "cut-off" from the surrounding development areas. This station will rely primarily on walk-up transit patrons, so it's important that direct and easy access is provided for each of the station locations

The primary pedestrian access will be provided from future streets associated with the area's new growth and development. The sidewalks associated with these streets must lead and provide access (pedestrian and vehicular) to the proposed stations. Design improvements to the entire streetscape experience from the surrounding area should be implemented to enhance the pedestrian access to the transit station as illustrated in **Figure 6.28**.

SR-905 is designed as a major freeway and will create a significant barrier for those pedestrians crossing the freeway to reach the stations. Creating a safe and convenient crossing at the stations may require a pedestrian bridge over SR-905 linking the two stations and their surrounding development areas together.

In general it will be beneficial to improve the future pedestrian access to the surrounding industrial neighborhoods with a comprehensive streetscape enhancement program for all future streets. This program will be part of the overall station development plan and should specifically include any streets that are being proposed in the Otay Mesa Industrial Park.

▪ **Otay Mesa Road – Harvest Station Issues**

For the propose station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- A pedestrian bridge is required for access to the surrounding land uses and additional right-of-way will be needed for the elevators and stairs necessary for this type of structure.
- Additional right-of-way will be required for the transit station and station ingress and egress lanes from SR-905.
- Carefully consideration should be given to the placement of the station to ensure that the access lanes do not conflict with the on-off ramps for SR-125 and SR-905.

**Environmental Issues**

- No significant environmental issues are anticipated at this station location. If the pedestrian bridge is provided there may be visual issues that will need to be addressed.

**Community Issues**

- Acquisitions of additional rights-of-way from adjacent private land owners for station and station access may become an issue. Efforts should begin to discuss the requirements and needs as SR-905 is being planned.



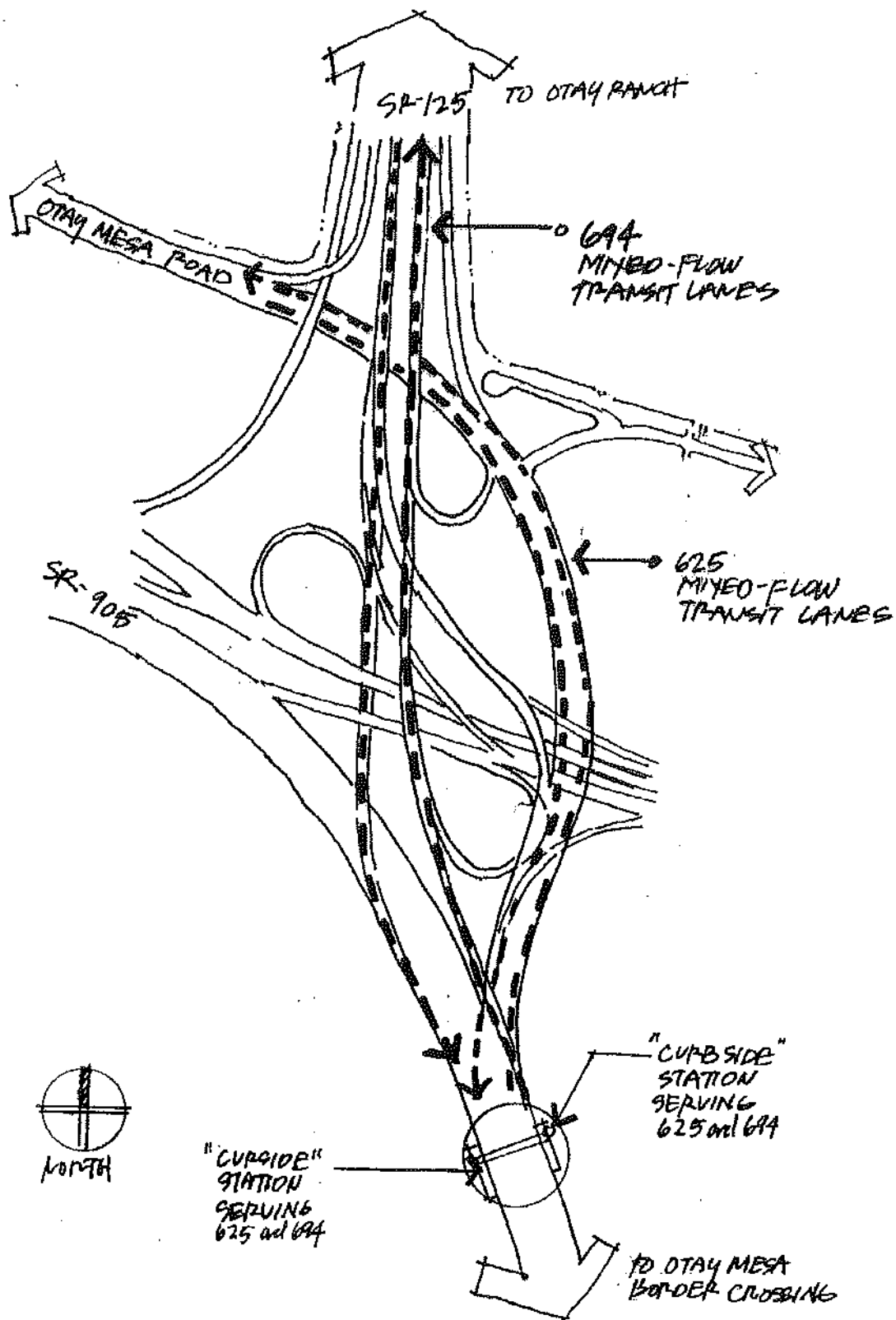


Figure 6.25  
Harvest Station Location

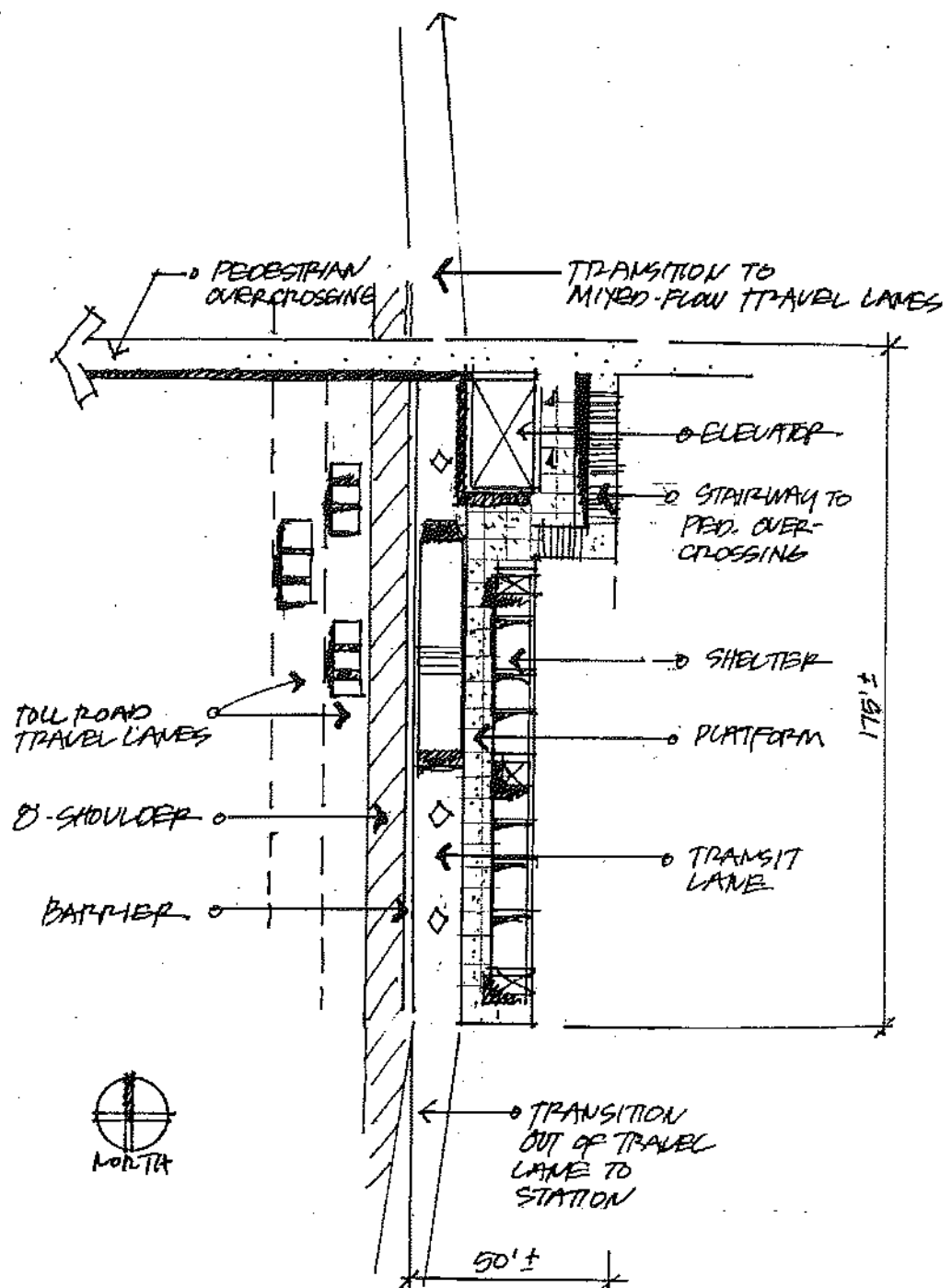
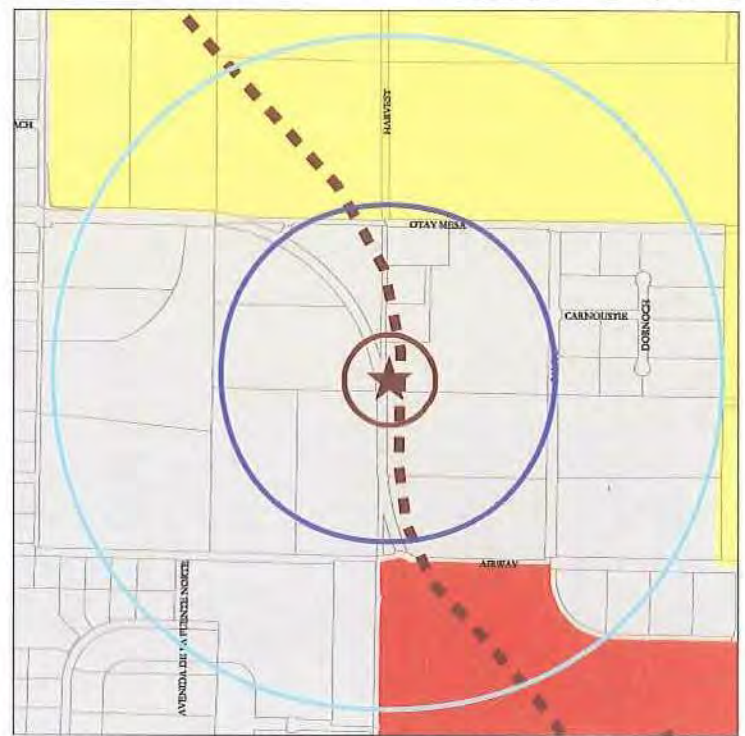


Figure 6.26  
Harvest Station Type



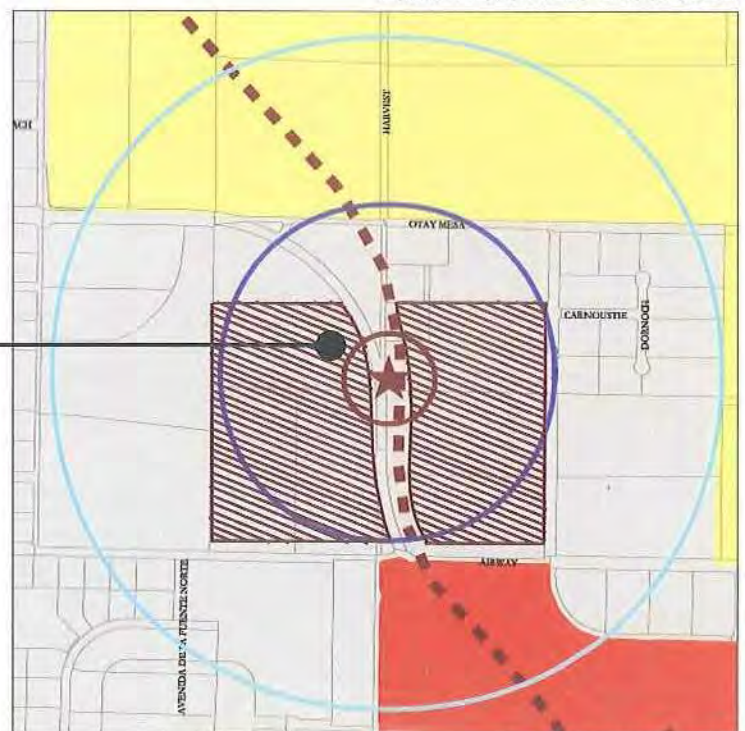
EXISTING LAND USE



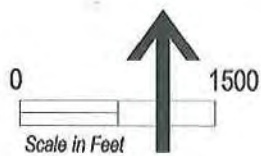
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Retail (Secondary)



OPPORTUNITIES

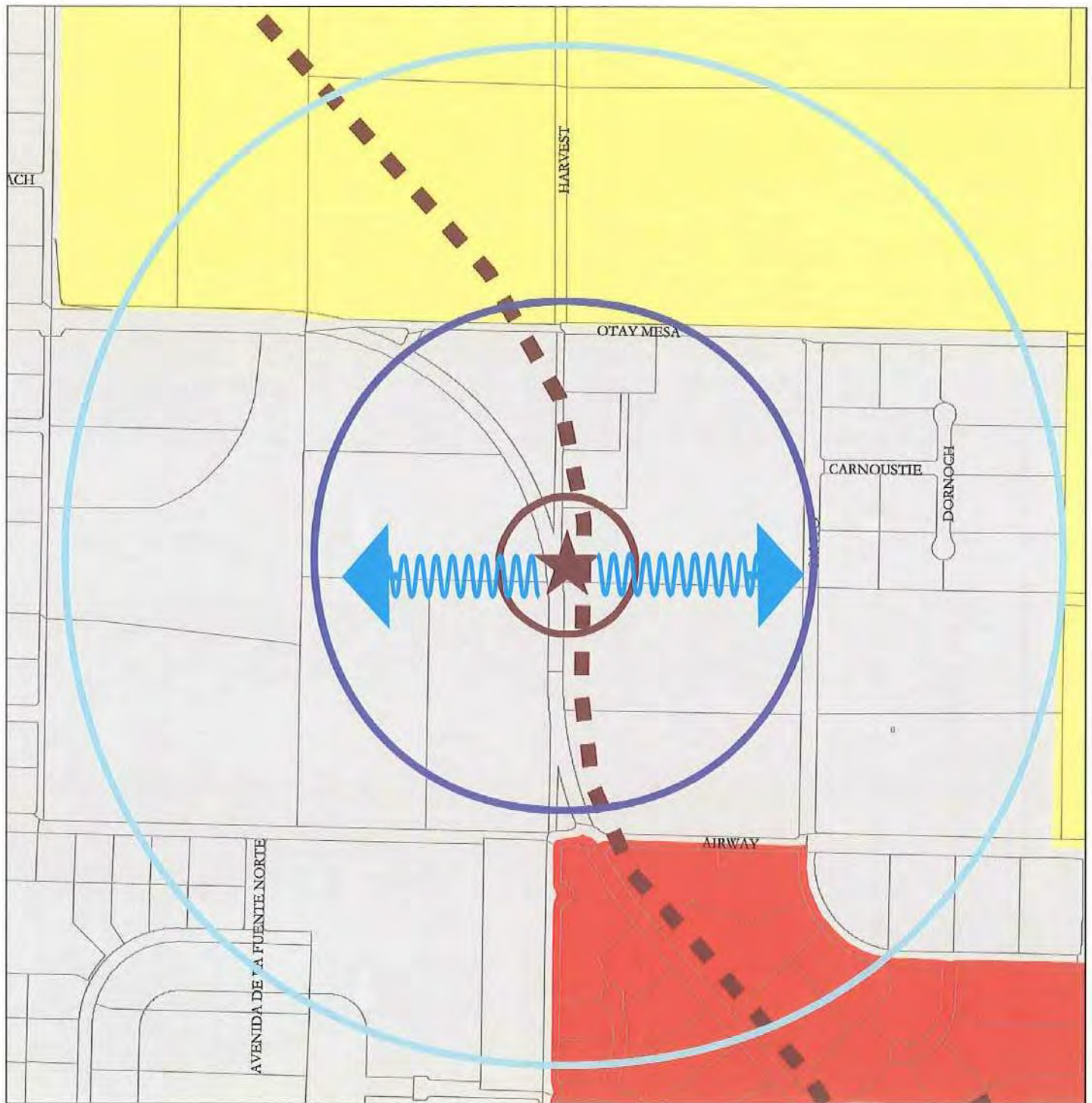


## LAND USE LEGEND

- |                                      |                          |
|--------------------------------------|--------------------------|
| (★) Car Station                      | Specific Plan Area       |
| - - - Car Service                    | Spaced Rural Residential |
| 1/4 Mile Buffer                      |                          |
| 1/2 Mile Buffer                      |                          |
| Industrial Parks                     |                          |
| Communications / Utilities           |                          |
| Agriculture / Orchards and Vineyards |                          |
| Vacant / Undeveloped                 |                          |
| Undeveloped                          |                          |
| Retail and Strip Commercial          |                          |

**Figure 6.27**  
**694 Alignment**  
**Otay Mesa Road and Harvest Station**





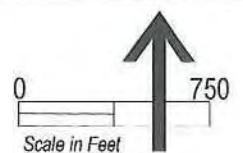
Station Location



694 Alignment



Pedestrian Access to Station



**Figure 6.28**  
**694 Alignment**  
**Otay Mesa Road and Harvest Station**



### **M. Otay Mesa Border Crossing Station**

The Otay Mesa Border Crossing Station is recommended to be located near the southerly end of Roll Drive. This recommendation is based on several factors: the ability to accommodate the necessary right-of-way for station improvements; the station's ability to serve numerous transit routes and provide transfer capabilities; and a location close enough to the border to allow for pedestrians to reach the station.

In addition to serving the 694 alignment, the Otay Mesa Border Crossing Station will serve the Tier One 625 route and the Blue Car 905 route. Based on the service these additional alignments will require, accommodation should be considered to address the "turn-around" need for all transit vehicles. The station is not considered for a park and ride type facility and will instead focus on transfer capabilities and high pedestrian activity.

The station will be located close to the area's employment centers and near the border crossing. Although this border crossing is not heavily used by pedestrians as the San Ysidro crossing, future pedestrian activity is expected to increase.

#### ▪ **Right-of-Way Requirements**

The Otay Mesa Border Crossing Station will be considered as a major hub and transfer station. The station will require multiple platforms for the different alignments proposed to serve this area. It is anticipated that approximately 1.5 acres of land will be needed to accommodate the station requirements. The station will be located outside the existing street right-of-way on property dedicated for transit center use as illustrated in **Figure 6.29**. Currently there are a number of vacant parcels in the general area of Roll Drive that will be suitable for use as a station.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

The existing land use plan illustrates the area is comprised of warehousing, commercial, industrial and government uses as shown in **Figure 6.30**.

##### **Planned (2020)**

The proposed 2020 land use plan illustrates changes in land use intensity with the addition of significant commercial uses to be located within  $\frac{1}{4}$  to  $\frac{1}{2}$  mile of the border as shown in **Figure 6.30**. Commercial industrial parks are the dominate uses proposed for 2020.

##### **Opportunities**

The land use changes illustrated in the 2020 Land Use Plan will help in supporting the proposed transit station. However, it may be appropriate to provide higher density mixed-use type developments incorporating both commercial and office uses closer to the stations. The mixed-use areas will be located in close proximity of the proposed station site as shown in **Figure 6.30**. This will create additional transit supportive uses and will strengthen the "walk up" capability of the station. Residential uses will not be appropriate in this location and is not recommended as part of the mixed-use component.

▪ **Access**

Due to the area's proximity to the border it is extremely congested with truck and other vehicle traffic. Pedestrians typically mix with the local traffic. They also use the local streets and sidewalks when accessing or leaving the border. This station, like the San Ysidro Station, will rely heavily on pedestrians for ridership.

Safe and direct pedestrian access should be a major consideration as the border crossing transit station is designed. In general it will be beneficial to improve future pedestrian access to the surrounding industrial/commercial neighborhoods and the border crossing with a comprehensive streetscape enhancement program for all streets in the general area as illustrated in **Figure 6.31**. This program will be part of the overall station development plan and should include the following streets:

- SR-905 Otay Mesa Road
- Siempre Viva Road
- Via de la Amistad
- Marconi Drive

▪ **Otay Mesa Border Crossing Station Issues**

For the propose Otay Mesa Border Crossing Station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- Purchase of private property for the off-site station will be required. This acquisition should be initiated as soon as possible to assure that the property is available for the station to be implemented. Acquisition is important as other alignments and transit services will also be using this facility.
- The station will need to accommodate turn-around movement by the transit vehicle for both Red Car and Blue Car services as this is a terminus and origination station.

**Environmental Issues**

- A traffic report may be required to determine possible impacts to local traffic by transit vehicles using the local streets.
- Land use issues may arise by removing the existing commercial land uses and replacing it with transportation uses for an off-street transit station.

**Community Issues**

- At this time no significant community issues are anticipated at this station location. There may be concerns by the surrounding businesses on the impact that the transit service will have on local traffic and on their businesses.

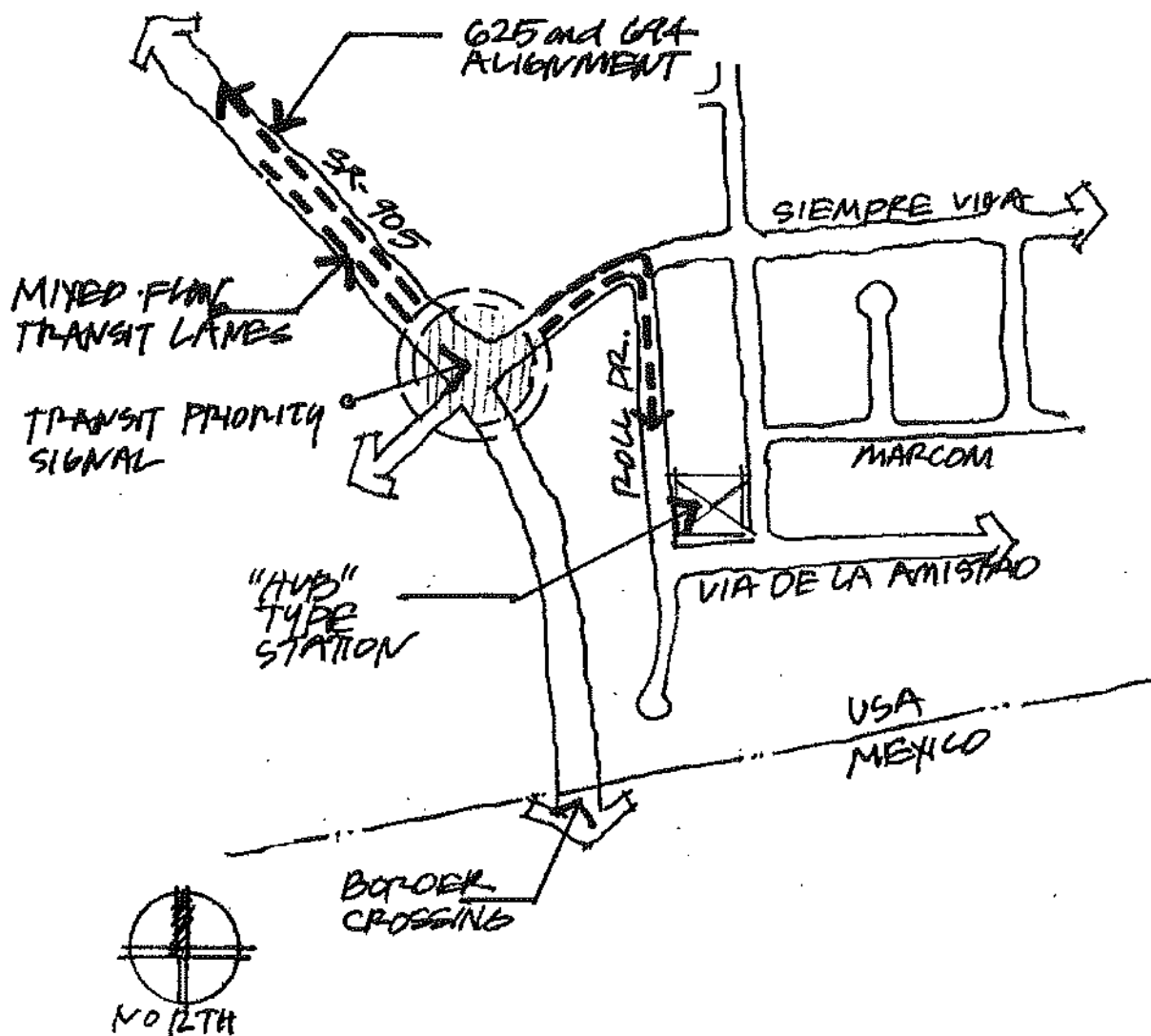


Figure 6.29  
Otay Mesa Border Crossing Station Location



EXISTING LAND USE



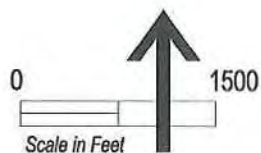
2020 PLANNED LAND USE

## Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

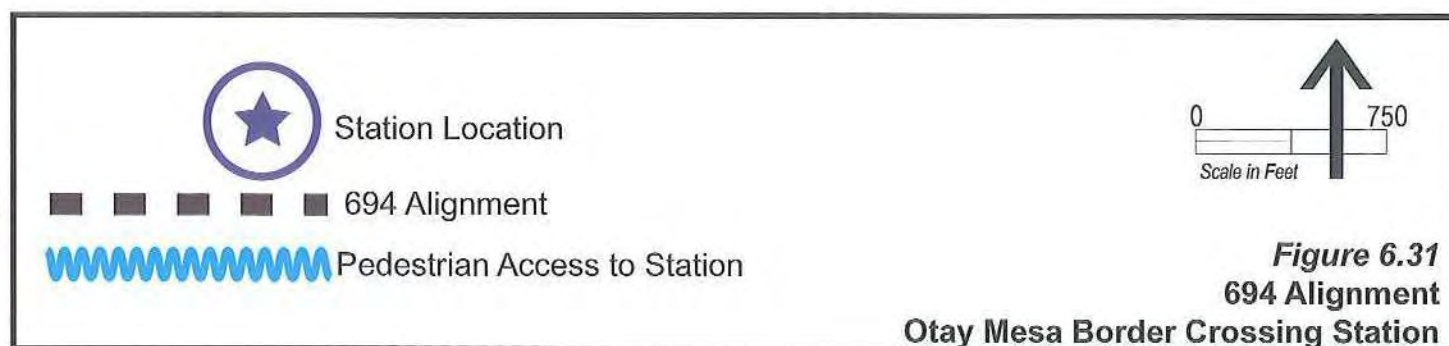
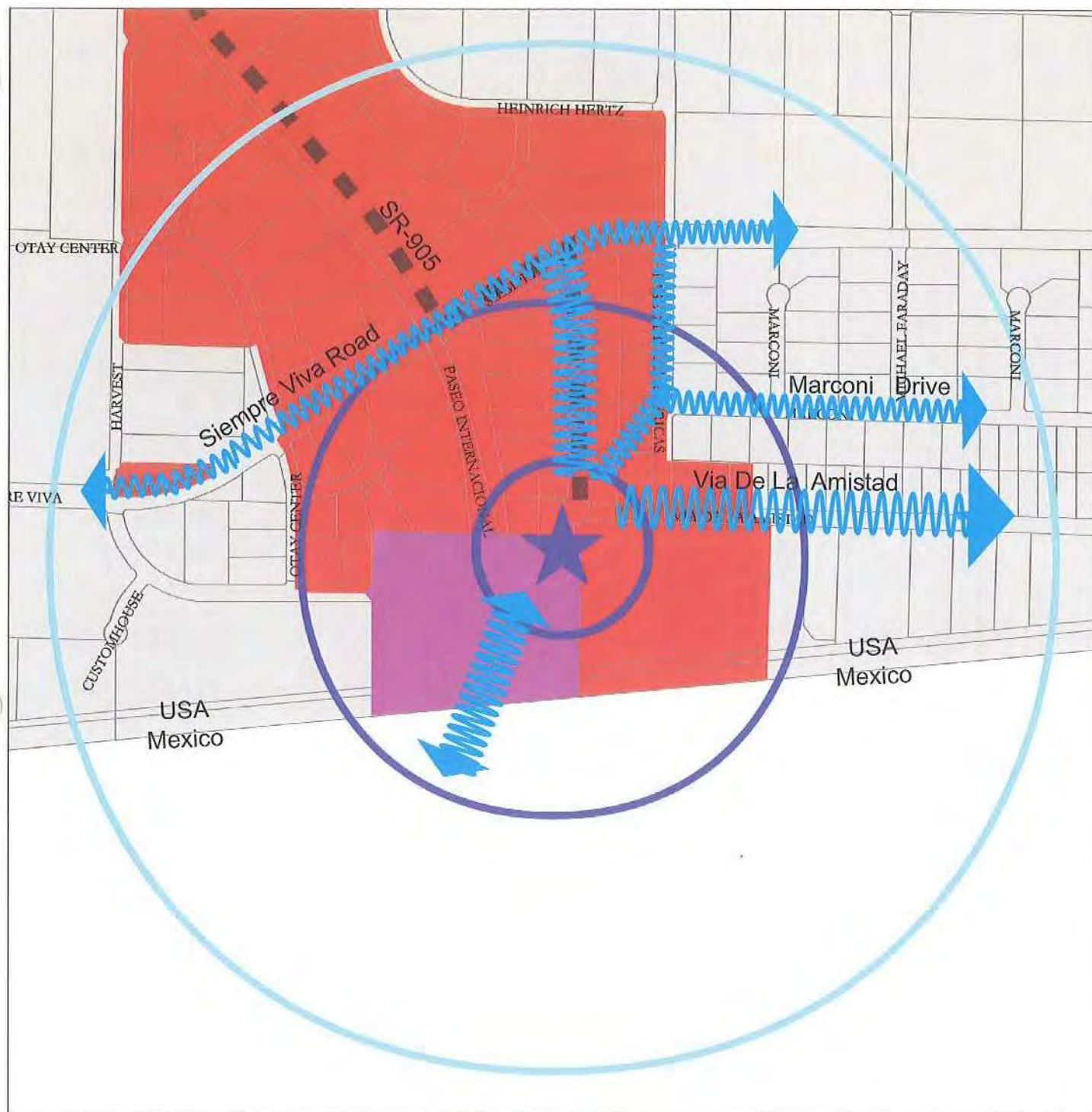


## LAND USE LEGEND

- |     |                              |   |             |
|-----|------------------------------|---|-------------|
| (*) | Car Station                  | □ | Undeveloped |
| --- | Car Service                  |   |             |
| □   | 1/4 Mile Buffer              |   |             |
| □   | 1/2 Mile Buffer              |   |             |
| □   | Industrial Parks             |   |             |
| □   | Warehousing / Public Storage |   |             |
| □   | Other Transportation         |   |             |
| □   | Retail and Strip Commercial  |   |             |
| □   | Office Lo-Rise               |   |             |
| □   | Gov't Office / Civic Centers |   |             |
| □   | Vacant / Undeveloped         |   |             |

**Figure 6.30**  
**694 Alignment**  
**Otay Mesa Border Crossing Station**





## Chapter 7 – RC-1 Alignment

### 7.1 SUMMARY OVERVIEW AND CONCLUSIONS

The following section provides an overview of the general route alignment, station types, and priority treatments for the RC-1 alignment. Additional project analysis and more detailed information pertaining to the alignment designs are provided in the sections following this summary.

#### A. RC-1 Alignment – Palomar Street Trolley Station - EUC - Eastlake Business Park

The RC-1 alignment is a significant east-west alignment providing a linkage from southwestern Chula Vista to the Otay Ranch Eastern Urban Center (EUC) and then to the Eastlake Business Park and is shown in **Figure 7.1**. The length of the alignment is approximately 13-miles.

The RC-1 route begins at the Palomar Street Trolley Station continues east on Palomar Street past Broadway and turns south on West Orange Avenue. At 4<sup>th</sup> Avenue the alignment turns south to Main Street. The alignment will turn east on Main Street and continue traveling east towards Interstate 805. The alignment will continue east past I-805 on Main Street to Otay Ranch and turn left on Rock Mountain Road. At Rock Mountain Road the alignment will continue east through the Villages of Otay Ranch. Future planning of Villages 4, 8, and 9 and other southerly parts of Otay Ranch are still evolving and the alignment in this area will depend on these efforts. The alignment and stations locations from these Villages will depend on the access issues to SR-125 and circulation studies for this area. The RC-1 route will cross State Route 125 and will continue northeast to Village 9 and then Otay Ranch EUC. From the EUC the alignment will continue north on the "Spine Road" to Olympic Parkway through the Freeway Oriented Commercial Site (FOC) and will turn east on Olympic Parkway to the intersection at Eastlake Parkway. The alignment will turn north and will continue on Eastlake Parkway past Otay Lakes Road turning east at Fenton Street terminating at the Eastlake Business Park.

#### B. Alignment Station Types

Based on the field research and project analysis there are 14 stations identified for the RC-1 route and are illustrated in **Figure 7.1**. The type of transit station associated with each location is summarized in **Table 7.1**. Future discussion for each station is provided in *Section 7.3: Station Location and Types*.

#### C. Priority Treatment Conclusions

The priority treatments conclusions for the RC-1 are summarized and illustrated in **Figure 7.2**. These recommendations are based primarily on the corridor's traffic congestion, physical constraints and their feasibility for implementation.

#### D. Land Use Conclusions

Implementation of RC-1 alignment is dependent on the redevelopment of the western corridor from I-805 to the Palomar Street Trolley Station. Without this redevelopment occurring there will not be sufficient ridership capable of supporting the alignment.





Alignment and Stations

MTDB - South Bay Transit  
First Project

ROUTE RC1 - Palomar Street to Otay  
Ranch to Eastlake Business Park

LEGEND

- Alignment
- Project Boundary
- Proposed Freeways
- Red Car Stations



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**Wilbur Smith Associates**  
9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 7.1**  
**ALIGNMENT AND STATIONS MAP**  
**RC-1 ALIGNMENT**

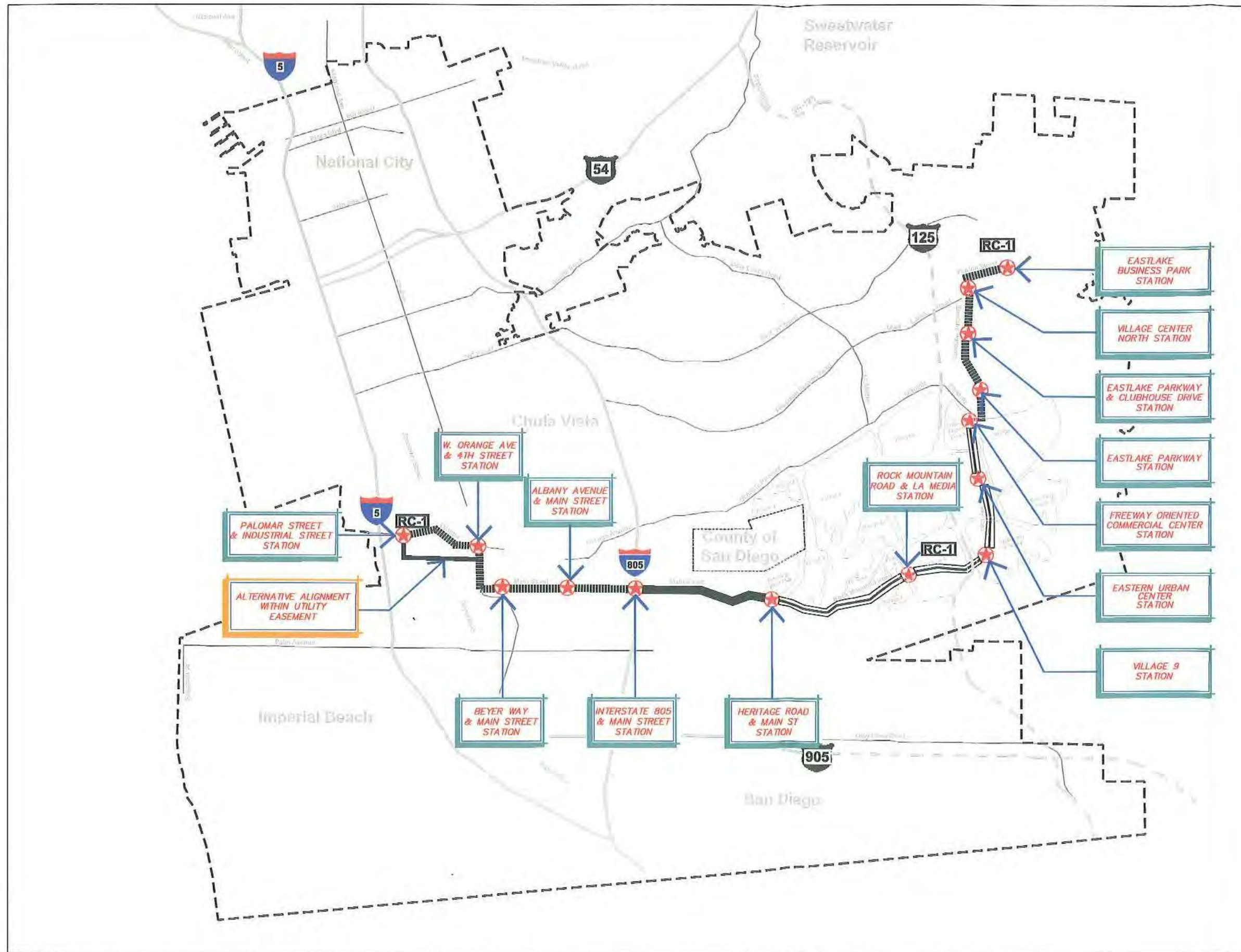


| Station Types                          |                        |                          |                           |                            |                           |                            |                     |                       |                 |
|----------------------------------------|------------------------|--------------------------|---------------------------|----------------------------|---------------------------|----------------------------|---------------------|-----------------------|-----------------|
| Station Locations                      | Freeway Median Station | Off Street / Transit Hub | Curbside Far-side Station | Curbside Near-side Station | Curbside Bulb-out Station | Curbside Mid-Block Station | Median Dual Station | Median Offset Station | Turnout Station |
| Palomar and Industrial St Station      |                        | ●                        |                           |                            |                           |                            |                     |                       |                 |
| W. Orange Ave and 4 <sup>th</sup> Ave  |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Beyer Way and Main St                  |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Main St and Albany Ave                 |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Main St and I-805                      |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Main St and Heritage Road *            |                        |                          | ○                         |                            |                           |                            | ○                   |                       |                 |
| Rock Mountain Road and La Media Road * |                        |                          | ○                         |                            |                           |                            | ○                   |                       |                 |
| Village 9*                             |                        |                          | ○                         |                            |                           |                            | ○                   |                       |                 |
| Eastern Urban Center                   |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |
| Freeway Oriented Commercial            |                        |                          |                           |                            |                           |                            | ●                   |                       |                 |
| Eastlake Parkway                       |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Eastlake Parkway and Clubhouse Dr.     |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |
| Village Center North                   |                        |                          |                           |                            |                           |                            |                     |                       | ●               |
| Eastlake Business Park                 |                        |                          | ●                         |                            |                           |                            |                     |                       |                 |

\*Stations currently being planned as part of the Otay Ranch Composite Planning Studies

**Table 7.1:**  
**RC-1 Summary Table - Station Locations and Types**





# Transit Priority Treatments Alignment and Stations MTDB - South Bay Transit First Project

**ROUTE RC1 - Palomar Street to Otay  
Ranch to Eastlake Business Park**

## LEGEND

- Dedicated Alignment Curbside Running
- Dedicated Alignment Median Running
- Mixed Flow Alignment
- Project Boundary
- Proposed Freeways
- Stations

**NOTE:** Priority Signals will be used at all signalized intersection along the alignment.

0 1/2 1 mile



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9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 7.2**  
**PRIORITY TREATMENTS MAP**  
**RC- 1 ALIGNMENT**

## 7.2 RC-1 ALIGNMENT ANALYSIS

This section discusses the RC-1 alignment and areas of significant traffic congestion that will inhibit the direct routing or reduce the necessary high travel speeds and service reliability for the Transit First route. Also identified in this section are the transit priority measures that could be used to minimize the impacts of these congested areas, maintain service reliability and their feasibility of implementation.

### A. Traffic Congestion

#### ▪ Near Term (2010)

Traffic levels of service (LOS) on the alignment roadways are projected to operate between A and F in the near term as illustrated in **Table 7.2**. It should also be noted that Main Street is not currently constructed east of the Otay Valley Road intersection. Based on SANDAG projections, Main Street will not be extended east toward Otay Ranch by the near term scenario year (2010).

All street segments west of the future Main Street and Heritage Road are expected to operate at a LOS C or better in the near term scenario.

The alignment segment within Eastlake Parkway from Olympic Parkway to Otay Lakes Road is projected to operate at LOS C or better. The segment of Fenton Street between Eastlake Parkway and Lane Avenue is projected to operate at LOS F. However, this segment is planned to be upgraded from two to four travel lanes at some point between 2015 and 2020.

#### ▪ Long Term (2020)

Traffic LOS on all alignment roadways are projected at C or better in the long term scenario with the exception of the segment of Main Street between Interstate 805 and Rock Mountain Road. This segment is expected to operate at LOS F in the long term scenario.

The remaining roadways are projected to operate at C or better. A large portion of the route alignment on Main Street extending east towards Otay Ranch is not planned to be completed within the near term horizon year.

In the near term, Fenton Street between Eastlake Parkway and Lane Avenue is expected to operate at LOS F as a two-lane facility. However, as stated above the segment is planned to be upgraded to a four-lane facility by the long term planning horizon and is expected to operate at acceptable service levels.

|                                                                 | 2010<br>Near Term |   |   |   |   |   | 2020<br>Long Term |   |   |   |   |   |
|-----------------------------------------------------------------|-------------------|---|---|---|---|---|-------------------|---|---|---|---|---|
| Levels Of Service(LOS)                                          | A                 | B | C | D | E | F | A                 | B | C | D | E | F |
| <b>Palomar Street</b><br>Industrial Blvd to W. Orange Ave       |                   |   | ● |   |   |   |                   |   | ● |   |   |   |
| <b>West Orange Ave</b><br>Palomar to 4 <sup>th</sup> Ave        | ●                 |   |   |   |   |   | ●                 |   |   |   |   |   |
| <b>4<sup>th</sup> Avenue</b><br>Orange Ave to Main St.          |                   |   | ● |   |   |   |                   |   | ● |   |   |   |
| <b>Main Street</b><br>4 <sup>th</sup> Ave to I-805              |                   |   | ● |   |   |   |                   |   | ● |   |   |   |
| <b>Main Street</b><br>I-805 to Rock Mountain Rd                 |                   |   | ● |   |   |   |                   |   |   |   |   | ● |
| <b>Rock Mountain Road</b><br>Main Street to Village 9           |                   |   |   |   |   |   | ●                 |   |   |   |   |   |
| <b>Eastlake Parkway</b><br>Olympic Parkway to Otay Lakes Drive  |                   | ● | ● |   |   |   |                   | ● | ● |   |   |   |
| <b>Eastlake Parkway</b><br>Otay Lakes Drive to Eastlake Parkway |                   |   | ● |   |   |   |                   |   | ● |   |   |   |
| <b>Fenton Street</b><br>Eastlake Parkway to Lane Ave            |                   |   |   |   |   | ● |                   |   | ● |   |   |   |

Levels of Service are ranked from LOS A = Best to LOS F = Worst.

Ranking is derived from the San Diego Street Design Manual which cross-references roadway classifications, average daily traffic and levels of service. See Chapter 1, Table 1.1 for ranking criteria.

**Table 7.2:**  
**RC-1 Alignment Congestion Levels**

### **B. Physical Constraints**

There are numerous physical constraints affecting the type of priority measures that will be need to be implemented along the route. These physical constraints are outlined below and illustrated in **Figure 7.3**:

- The western area of the corridor that extends from the Palomar Trolley Station to Main Street at Interstate 805 is fairly well developed. Expanding the right-of-way to provide dedicated transit lanes in this area will require significant acquisitions for improvements.
- The segment of Palomar Street between Industrial Boulevard and West Orange Avenue consists of a narrow right-of-way within fully developed areas. Without acquisition of additional right-of-way or the removal of on-street parking in this area, it will be difficult to expand the right-of-way for dedicated transit lanes. However, a



dedicated transit lane may not be needed due to the lack of traffic congestion in this portion of the corridor.

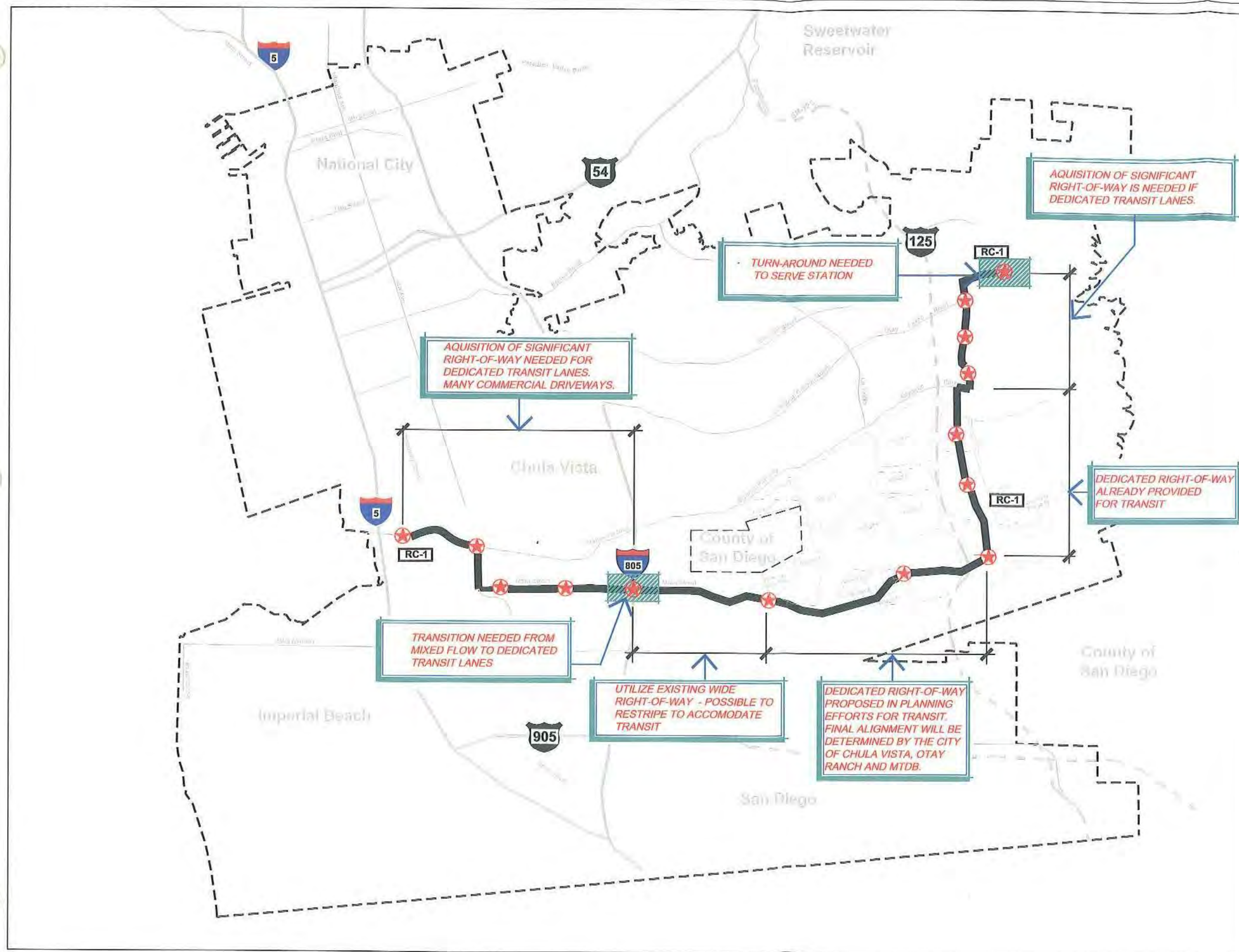
- Numerous commercial storefronts border the edge of the right-of-way along Palomar Street to West Orange Avenue. Mixed-flow transit lanes or dedicated transit lanes operating in the outside lane could experience operational issues due to the numerous commercial driveways.
- An existing east / west utility easement is located south of Orange Avenue at 4th Avenue that could be used for an alternative alignment to the Palomar Trolley Station. However, it appears that traffic congestion levels in this area may not warrant this deviation. Also, coordination with the local utility company will be required to obtain access agreements.
- Existing right-of-way on 4<sup>th</sup> Avenue is fully developed on both sides including a library, mobile homes, school site, single and multi-family housing. Widening the right-of-way for exclusive dedicated transit lanes will require significant acquisition. However, it appears that traffic congestion levels in this area may not warrant the need for dedicated transit lanes.
- Along Main Street there are multiple curb cuts and provisions for unrestricted left turn movements. These types of turn movements could affect the operational ability for mixed-flow transit routes.
- The area between Interstate 805 and Heritage Road on Main Street can accommodate transit lanes within the existing right-of-way. Modification of the existing right-of-way for transit lanes could occur within the large median area that remains undeveloped within the existing right-of-way.
- An area that may pose difficulty with a right-of-way expansion is the area near the I-805 underpass. Expanding the right-of-way in this area will require significant improvements to the underpass / bridge.
- The portion of the route that follows Eastlake Parkway north of Olympic Parkway is also fairly well developed. Provisions for dedicated transit lanes in this area will require significant acquisition for implementation.
- Turn-around opportunities for transit vehicles will be needed at the alignment's terminus in Eastlake Business Park. This should be incorporated into future planning efforts for the business park.

A summary of these comments is illustrated in **Figure 7.3**.

### **C. Priority Treatments**

The following priority measures are proposed to ensure that the transit lanes are able to avoid the identified congestion areas and are illustrated in **Figure 7.2**.





**Physical Constraints Map**  
MTDB - South Bay Transit  
First Project

**ROUTE RC1 - Palomar Street to Otay Ranch to Eastlake Business Park**

**LEGEND**

- Alignment
- Project Boundary
- Proposed Freeways
- Red Car Stations
- Yellow and Red Car Stations

0 1/2 1 mile



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**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123  
858-279-3776

**FIGURE 7.3**  
**PHYSICAL CONSTRAINTS MAP**  
**RC-1 ALIGNMENT**

▪ **Near Term (2010)**

Based on near term projected traffic levels, mixed-flow transit operations should be sufficient in the majority of the alignment's corridor. Portions of the alignment traveling through Otay Ranch will use the dedicated transit lanes currently being developed or proposed.

Although dedicated lanes are not suggested in the near term, transit priority traffic signal measures should be considered at major intersections along this corridors including:

- Intersections on Palomar Street
- Orange Avenue to 4th Avenue
- Main Street to I-805
- Main Street/I-805 Interchange
- Main Street to Heritage Road
- Rock Mountain Road to Village 9
- Spine Road to Olympic Parkway
- Olympic Parkway and Eastlake Parkway
- Eastlake Parkway to Fenton Street.

An alternative alignment should be further explored using the utility easement located south of Orange Avenue at 4th Avenue. This alternative route by-passes numerous signalized intersections on Palomar Street and Orange Avenue providing a direct route to the Palomar Trolley Station.

In the future the Palomar Trolley Station design may be affected by a grade separated crossing for the 510 alignment over Palomar Street. This has the potential to require a significant redesign of the station and affecting the 625 platform location. Further study will be needed to determine if grade separation is needed based on MTDB's Policy and Procedures No. 38. A copy of this document is provided in the Appendix.

It should be noted that the near term implementation of the RC-1 alignment is remote and predicated on the ability for this corridor to attract ridership. Currently, the low intensity of the surrounding land uses and lack of major activity centers (especially in the western portion of the alignment) will preclude this alignment from being considered for early implementation.

▪ **Long Term (2020)**

Based on long term projected traffic levels, mixed-flow transit operations should be sufficient for all of the alignment roadways west of Interstate 805. If the RC-1 is not implemented in the "near term" scenario, an alternative alignment could be explored using the utility easement located south of Orange Avenue at 4<sup>th</sup> Street. As stated

earlier, this alignment alternative by-passes numerous signalized intersections on Palomar Street and Orange Avenue providing a direct route to the Palomar Station.

For the "long term" scenario it is recommended that dedicated transit lanes be provided for the segment of Main Street east of Interstate 805 to Heritage Road as illustrated in **Figure 7.4**.

The alignments that are located within Otay Ranch are assumed to be within dedicated transit lanes as proposed by the City of Chula Vista's Composite Planning Studies and similar to **Figure 7.4A**. North of Olympic Parkway the alignment will continue to operate in mixed-flow traffic lanes on Eastlake Parkway and Fenton Street.

The use of priority traffic signal measures should continue to operate at the signalized intersections along the corridors identified in the "near term" scenario.

#### **D. Engineering and Environmental Issues**

The following are engineering, environmental issues potentially affecting the priority measures identified for the alignments in existing land use areas.

##### ▪ **Palomar Street - Palomar Trolley Station to West Orange Avenue**

- With the use of mixed-flow transit lanes there are no significant engineering issues for this portion of the alignment. However, with the many curb cuts and access points to the surrounding commercial properties operational issues may arise with curbside running transit vehicles. Future studies will need to review traffic and circulation patterns in this corridor to determine how it will affect future transit operations.
- No significant environmental issues appear to be associated with this portion of the alignment. There will be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes. Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

##### ▪ **West Orange Avenue - Palomar Street to 4th Avenue**

- The use of mixed-flow transit lanes in this segment of the corridor will not have significant engineering issues. Again, there are numerous curb cuts on the north side of West Orange Avenue leading to the residential driveways. This could have an impact on the transit operations with transit vehicles operating in mixed-flow traffic lanes.
- No significant environmental issues are anticipated for this portion of the alignment. There will be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes. Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

▪ **4<sup>th</sup> Avenue – Orange Avenue to Main Street**

- An existing east / west utility easement is located south of Orange Avenue at 4th Avenue could be used as an alternative alignment to the Palomar Trolley Station. However, it appears that traffic congestion levels in this area may not warrant this deviation. Also, coordination with the local utility company will be required to obtain access agreements.
- The use of mixed-flow transit lanes in this segment of the corridor will not have significant engineering issues.
- No significant environmental issues are associated with this portion of the alignment. There will be no major improvements or right-of-way acquisitions needed to implement the mixed-flow transit lanes.
- Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

▪ **Main Street - 4<sup>th</sup> Avenue to I-805**

- The primary engineering issues along this segment of Main Street will be the multiple curb cuts and provisions for unrestricted left turn movements. These types of turn movements could affect the operational ability for mixed-flow transit routes. However, due to the time frame for the implementation of this alignment the number of existing curb cuts may be reduced or eliminated as the area is redeveloped.
- No significant environmental issues are associated with this portion of the alignment. There will be no right-of-way acquisitions needed to implement the mixed-flow transit lanes. Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

▪ **Main Street – I-805 to Heritage Road**

- The existing curb to curb section of this segment will have to be modified to accommodate the dedicated curb side running transit lanes.
- Underground utilities may have to be relocated when modifying the curb to curb section. Additional research will be necessary to determine utility locations.
- No significant environmental issues are associated with this segment of the alignment. Provisions for the dedicated transit lanes will not disturb any surrounding uses since a large median remains undeveloped within the existing right-of-way.
- Expansion of the I-805 underpass appears not to be necessary due to the proposed priority measures.



▪ **Rock Mountain Road – Heritage Road to Village 9 Otay Ranch**

- In the Otay Ranch area current planning efforts include reserving transit right-of-way within proposed streets. Composite planning studies being prepared illustrate dedicated transit lanes in Villages 4, 8, and 9. Final transit alignment is still being determined including station locations.
- Traffic issues associated with the transit priority signals will require preparing future traffic and circulation analysis.

▪ **Spine Road – Village 9 to Olympic Parkway**

- In the Otay Ranch area current planning efforts include reserving a transit right-of-way within proposed streets. Composite planning studies being prepared illustrate dedicated transit lanes in Villages 9, the Eastern Urban Center and the FOC to Olympic Parkway.
- Traffic issues associated with the transit priority signals will require preparing future traffic and circulation analysis.

▪ **Olympic Parkway – Spine Road to Eastlake Parkway**

- The proposed mixed flow transit lanes will operate within the planned 128-foot curb to curb section of Olympic Parkway.
- Transit priority signal are proposed at the intersections with the “Spine Road and Eastlake Parkway.
- Traffic issues associated with the transit priority signals will require preparing future traffic and circulation analysis.

▪ **Eastlake Parkway – Olympic Parkway to Fenton Street**

- The use of mixed-flow transit lanes in this segment of the corridor will not have significant engineering issues. There are few intersections or curb cuts that will impede transit vehicles.
- No significant environmental issues are associated with this portion of the alignment. There will be no right-of-way acquisitions needed to implement the mixed-flow transit lanes.
- Traffic impacts may be associated with the transit priority signals and future analysis should be prepared to address this issue.

▪ **Fenton Street – Eastlake Parkway to Harold Place**

- The use of mixed-flow transit lanes in this segment of the corridor will not have significant engineering issues. There are some street intersections and curb cuts leading to parking areas that could present operational issues for curbside running transit vehicles.
- Turn-around opportunities for transit vehicles will be needed at the alignment's terminus in Eastlake Business Park. Because this area is to be developed future planning efforts should consider the turn-around requirements at the station. This issue is also discussed in the Section 7.3 Station
- No significant environmental issues are associated with this segment of the alignment. There will be no right-of-way acquisitions needed to implement the mixed-flow transit lanes.

**E. Feasibility of Priority Treatment Implementation**

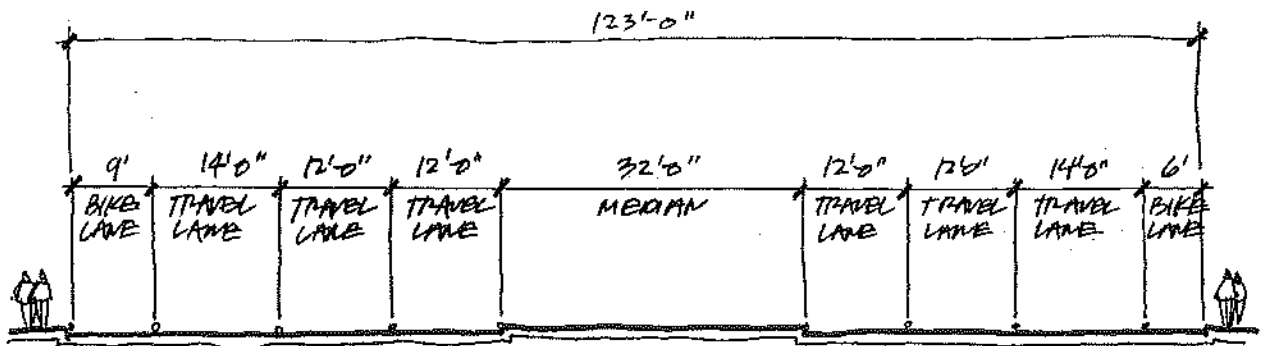
***Near Term (2010) and Long Term***

The near and long term implementation measures should be feasible given the limited priority treatments that are being identified. Mixed-flow travel lanes from Palomar Street Trolley Station to I-805 should be feasible with out significant improvements to the existing right-of-way. The completion of Main Street east of I-805 to Heritage Road will allow for proposed dedicated transit lanes to connect with those currently being planned within Otay Ranch. Future improvements to Olympic Parkway and Eastlake Parkway will allow for the continuation of mixed-flow transit lanes north of Otay Ranch to the Eastlake Business Park.

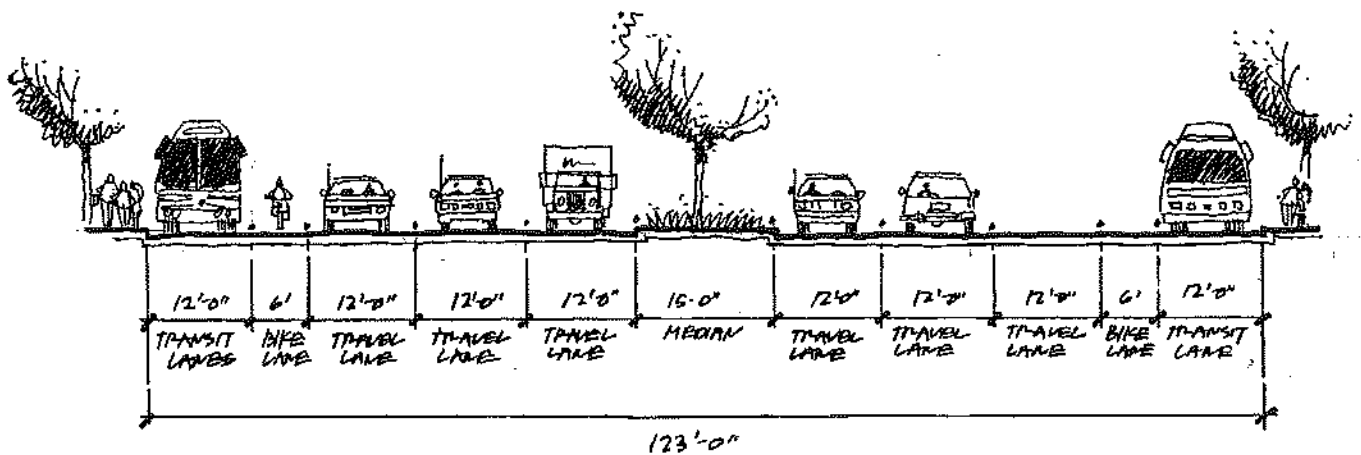
**F. Conclusions**

Due to the absence of significant congested areas, the RC-1 alignment will not require dedicated transit lanes in the existing urban areas west of Interstate 805. However, transit priority measures will be a key concern for the area east of Interstate 805 between the interstate and Heritage Road. The transit priority treatments identified for Main Street east of I-805 should be feasible as planned infrastructure improvements are implemented.

Dedicated transit lanes proposed within Otay Ranch will allow the RC-1 alignment to be easily implemented. Mixed-flow transit lanes proposed within Eastlake will also be feasible and allow for easy implementation. However, to make this alignment successful it will require that the surrounding land uses adjacent to the alignment be able to support transit services. Sufficient land use intensity will be needed in the future to attract the type of ridership necessary to make this route feasible.



Existing Main Street Cross Section



Proposed Main Street Cross Section with Transit Lanes

Figure 7.4  
Main Street East of Interstate 805

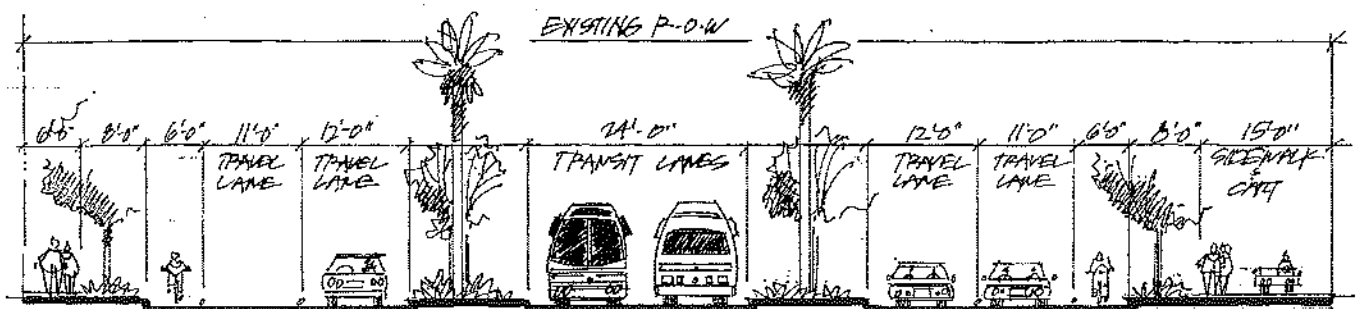


Figure 7.4A  
Typical Dedicated Transit Lanes within Otay Ranch

## 7.3 STATION LOCATION AND TYPES

### A. Palomar Street Station

The Palomar Street Station will continue to serve the 510 and the new RC-1 alignment identified as a Tier One route. Currently the Palomar Street Station is a park and ride facility and provides 230 daily parking spaces. The parking area is located immediately east of the station platform. The parking lot associated with the station typically operates at approximately forty to fifty percent of its capacity during peak commuting periods.

This station also serves as a transfer hub for numerous Blue Cars including 701, 702, 703, and the 712.

#### ▪ Right-of-Way Requirements

The Palomar Street Station will be a vital station serving multiple transit alignments and transit service types. The RC-1 alignment will need a "turn-around" area to be included as part of the station's design. Also, needed is a "park and ride" facility that will serve the RC-1 and other transit routes.

A station redesign will be necessary in order to provide for the RC-1 and 510 Red Car services and the transfer capabilities for the Blue Car service. This redesign will allow the station to continue serving as a major "Transit Hub." The right-of-way requirements for the transit facility redesign should be able to remain within its current "foot-print." Additional details for the Palomar Street Station are provided in *Chapter 3* regarding the 510 alignment.

#### ▪ Land Use Integration

##### **Existing (1999)**

A significant portion of the area's existing land use is non-residential. The residential uses within the station's ¼ mile ½ mile radius are low density consisting of primarily single family developments, as illustrated in **Figure 7.5**.

The existing uses north of the proposed station consist of retail commercial uses, a Health and Human Resources office project and a major utility easement. Low-density residential developments and a newly built affordable housing project are located west of the proposed station. East of the proposed station the uses consist of retail and community serving commercial. South of the proposed station location are light industrial uses and a utility easement.

Presently, vacant lots may be available to expand the current station to the southwest and the northeast of the station. These vacant lots represent an excellent opportunity to expand the station to accommodate the RC-1 and the 510 alignments.

##### **Proposed (2020)**

The proposed 2020 land uses depict a land use pattern similar to the existing land uses, as shown in **Figure 7.5**. The predominant land uses continue to be industrial and commercial uses with residential uses serving in a secondary role.



### **Opportunities**

A redevelopment opportunity with a significant mixed-use component located near the station is recommended. Building mixed-use developments near the station will be highly transit supportive. The inclusion of medium to high density residential uses, light industrial, office/employment uses in conjunction with commercial uses will also increase the potential for additional transit riders.

This location is also being proposed as a potential "Smart Growth" site in SANDAG's 2030 RTP Mobility Emphasis Draft Network. With this in mind the ability to achieve a development intensity to allow for greater density should be feasible. The success of the RC-1 route is heavily dependent on the potential of redevelopment at this station and other stations in the western part of the alignment (west of I-805).

It is recommended that mixed-use opportunities occur near the Palomar Street Station as shown in **Figure 7.5**. The mixed-use areas will all be located east of Interstate 5 and in close proximity of the station.

For the mixed-use area west of Industrial Avenue and south of Palomar Street it is recommended that residential be the dominant land use with commercial and office uses being secondary. The mixed-use area north of Palomar Street and east of Industrial Boulevard could consist of predominately commercial uses with secondary uses of office and residential supporting the development.

### ■ **Access**

Because the Palomar Street Station is an existing park and ride facility the pedestrian access from the parking lots and the Blue Car service is fairly direct with few conflicts on site. However, significant station improvements are needed to enhance pedestrian access from surrounding neighborhoods as they are redeveloped and to encourage potential riders to walk to the station. As future infill and land use intensification increases in the surrounding area the benefit of grade separation for the trolley alignment may provide better and safer pedestrian access.

The sidewalks on existing streets are the primary means to access this station from the surrounding neighborhoods and will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Palomar Street should be wide, pleasant and provide a sense of safety. This enhancement program will be part of the overall station redevelopment plan and should include the following streets as shown in **Figure 7.6**:

- Palomar Street
- Industrial Boulevard
- Broadway
- Dorothy Street
- Anita Street
- Oxford Street

Another opportunity for station pedestrian access is to create a pedestrian way within the utility easement south of Palomar Street. This wide easement is identified as an

open space feature and could incorporate a walkway or path linking the neighborhoods east of the Palomar Street Station.

▪ **Palomar Street Station Issues**

For the proposed Palomar Street Station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- Traffic impacts at the Palomar Street grade crossing resulting from increases in train frequency require further investigation. There are insufficient forecast data on peak hour vehicular traffic crossing the 510 track to determine the extent to which additional train crossings will increase delay and queue lengths to unacceptable levels.
- Substantial impacts from increases in delay or queue will require engineering and implementation of mitigation measures, including the potential for a grade separated crossing.

**Environmental Issues**

- The station has available parking capacity. Park-and-ride activity may increase at the station in response to increased train frequency and growth. The additional vehicular traffic may negatively impact area streets and roads. Increases in train frequency will increase noise and vibration and may negatively impact nearby sensitive land uses.

**Community Issues**

- Increases in vehicular traffic accessing the station and noise impacts are potential community impacts requiring further investigation.



EXISTING LAND USE



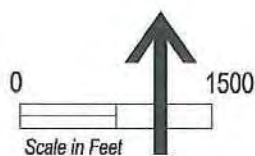
2020 PLANNED LAND USE

Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Residential (Primary)
- Office/Commercial (Secondary)



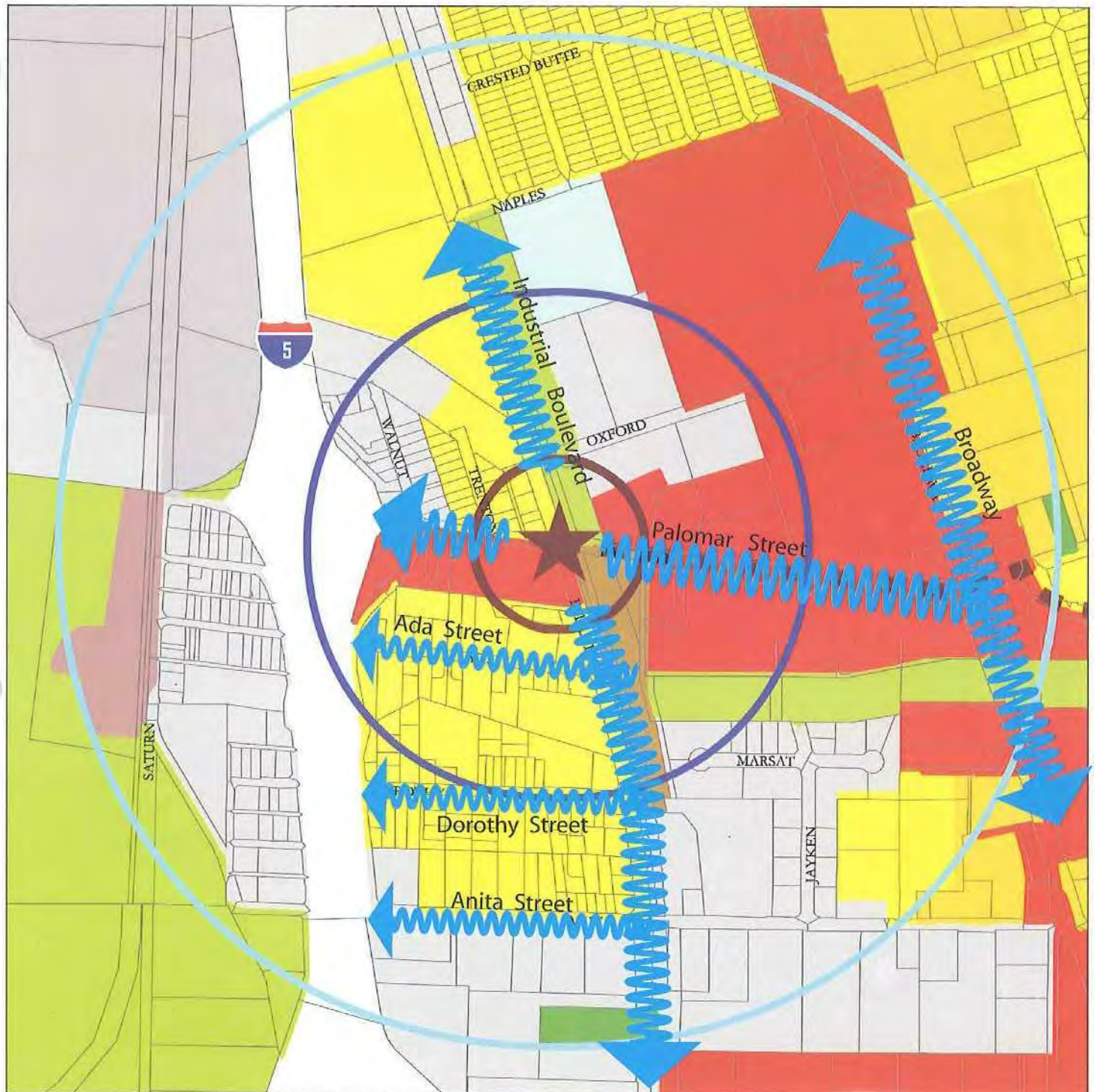
OPPORTUNITIES

LAND USE LEGEND

- |                              |                               |                               |
|------------------------------|-------------------------------|-------------------------------|
| ⊙ Car Station                | Extractive Industry           | Open Space Reserves/Preserves |
| — Car Service                | Rail Station/ Transit Centers | Parks                         |
| 1/4 Mile Buffer              | Freeways / Roads              |                               |
| 1/2 Mile Buffer              | Communications / Utilities    |                               |
| Single Family Residential    | Retail and Strip Commercial   |                               |
| Multi Family Residential     | Office Lo-Rise                |                               |
| Mobile Home Parks            | Religious Facilities          |                               |
| Hotel/Motel Lo-Rise          | Elementary Schools            |                               |
| Industrial Parks             | School District Offices       |                               |
| Warehousing / Public Storage | Vacant / Undeveloped          |                               |

**Figure 7.5**  
**RC-1 Alignment**  
**Palomar Street Station**





**Figure 7.6**  
**RC-1 Alignment**  
**Palomar and Industrial Street Station**



## **B. 4<sup>th</sup> Avenue and Orange Avenue Station**

The 4<sup>th</sup> Avenue and Orange Avenue Station is located in an area that currently has no significant activity center(s). The future redevelopment of the area should consist of more intensive land uses helping supporting the success of the proposed station.

Based on the transit priority treatments proposed for this area, it is anticipated that two curbside stations will best accommodate the alignment. One station will serve the westbound alignment and the other will serve the eastbound alignment. The eastbound alignment will be located on the southwest side of Orange Avenue thus requiring a far-side station. The westbound alignment will be located on the northwest side of Orange Avenue again requiring a far-side station as shown in **Figure 7.7**.

### ▪ **Right-of-Way Requirements**

The right-of-way requirements for a curbside station will be 15-feet x 150-feet similar to the one shown in **Figures 1.6** of *Chapter 1*. These requirements will accommodate 15-foot boarding and alighting platforms and the length will allow service for multiple transit vehicles.

Currently a 10-foot wide parkway (5-foot sidewalk and 5-foot planting area) are provided at both locations. Additional right-of-way of 5-feet x 150-feet will be required for the proposed improvements. Also, currently on Orange Avenue there are multiple curb cuts that serve the homes fronting the street. There are no curb cuts that will interfere with the station on 4<sup>th</sup> Avenue. Development of a station at these locations will have to work in concert with future redevelopment.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The predominant land uses in the area are identified as low density residential uses with small amounts of commercial, institutional, and schools uses as illustrated in **Figure 7.8**. The existing uses around the proposed stations currently include a utility easement, single family homes, mobile homes, an elementary school and a neighborhood library. This station location will be dependant on future redevelopment to be more transit supportive. The existing uses are low in intensity and could provide higher ridership if the land uses were intensified.

#### **Proposed (2020)**

As illustrated in **Figure 7.8**, land uses proposed for 2020, include increasing the single family residential uses, providing for park and open space areas, elementary school and commercial / retail within the ¼ and ½ mile radius of the station.

#### **Opportunities**

Opportunities for mixed-use developments at 4<sup>th</sup> Avenue and Orange Street are considerable as illustrated in **Figure 7.8**. It is recommended that mixed-use opportunities occur near the Palomar Street Station as shown in **Figure 7.8**. The mixed-use areas will be located both north and south of Orange Avenue in close proximity to the station. The mix of land uses proposed near the station will consist of

primarily residential with commercial being a secondary use. The commercial uses could consist of both retail and office.

The alignment could benefit from the existing library if accessibility is provided. Other civic or cultural uses could also be included in the mix of uses proposed for this location creating a public community hub for this corridor. A need for more transit supportive uses is critical for this station to be successful and will strengthen the "walk-up" capability. These future development opportunities should be built close to the street allowing integration of the station into the project design. Also, building these diverse uses along the street creates a more active streetscape making the walking experience more enjoyable.

▪ **Access**

The sidewalks on existing streets are the primary means to access this station from the surrounding neighborhoods and will benefit from a comprehensive streetscape enhancement program. As a minimum the pedestrian access on Orange Avenue and 4th Avenue should be wide, pleasant and provide a sense of safety. This enhancement program will be part of the overall station/land use redevelopment plan and include the following streets as shown in *Figure 7.9*:

- Orange Avenue
- Fourth Avenue
- Quintard Street
- Third Avenue
- Fifth Avenue

Another opportunity for station pedestrian access is to create a pedestrian way within the utility easement located south of the Orange Avenue. This wide easement is identified as an open space feature and could incorporate a walkway or path linking the neighborhoods east and west of the station.

▪ **4<sup>th</sup> Avenue and Orange Avenue Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- There are multiple curb cuts serving the residential driveways on Orange Avenue. Providing the station at this location under current conditions will require the removal of several curb cuts / access drive way to the existing homes.
- Acquisition of additional right-of-way for both station platforms will be necessary to achieve the full 15-foot wide area.
- It is anticipated that the RC-1 alignment and associated station improvements will not occur until the area is redeveloped and the land uses are intensified. Provisions for the transit stations should be incorporated into the redesign at that time.

**Environmental Issues**

- A traffic and circulation study may be required to assess the impact that the transit priority signal will have on surrounding local traffic.

**Community Issues**

- No significant community issues are anticipated if the stations are developed as part of an overall redevelopment master plan.

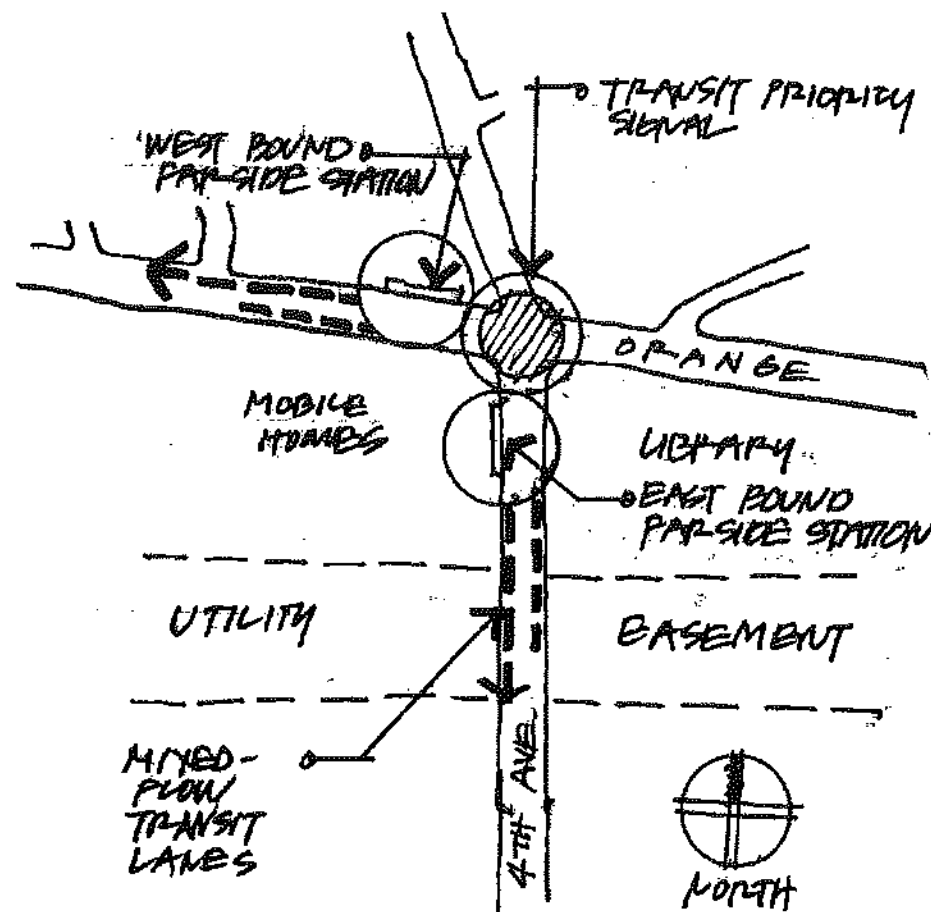
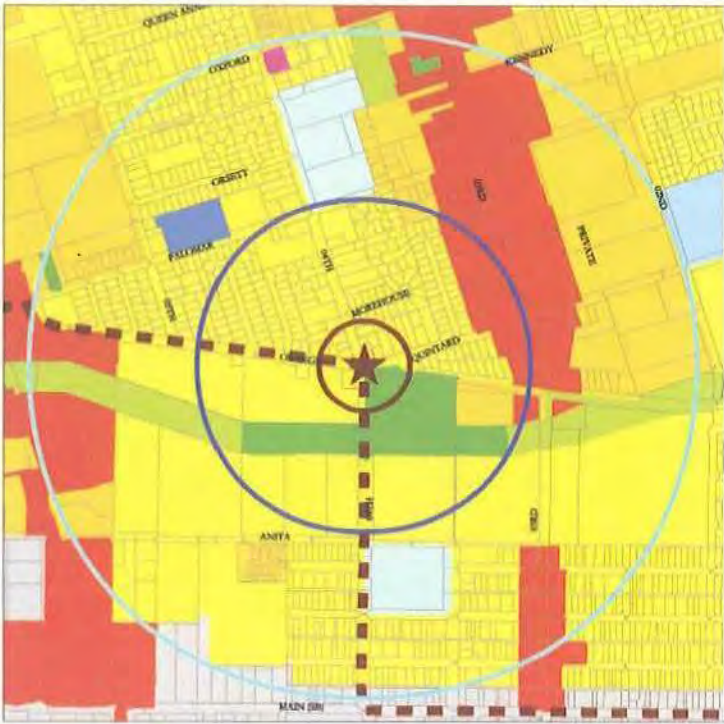


Figure 7.7  
4<sup>th</sup> Avenue and Orange Avenue Station Location

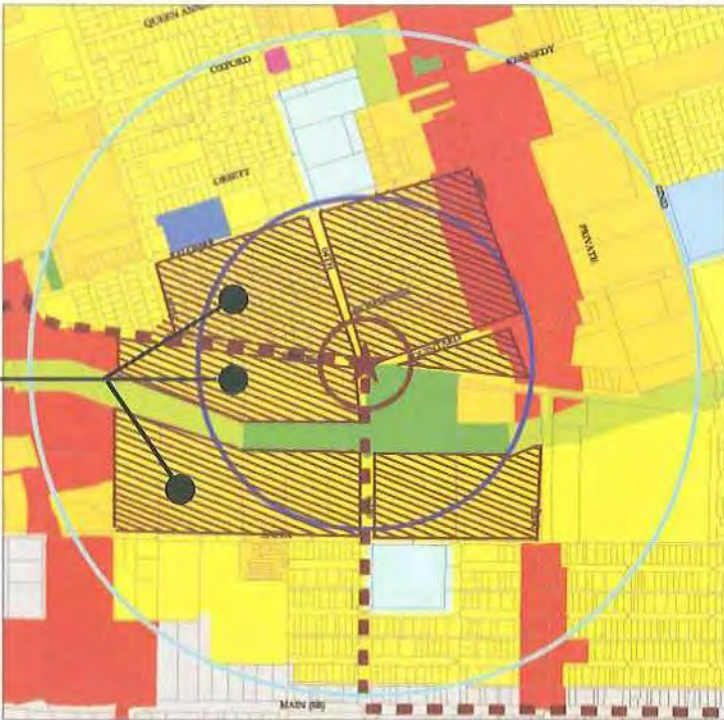


EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities  
▪ Residential (Primary)  
▪ Commercial (Secondary)



OPPORTUNITIES



LAND USE LEGEND

- |                              |                             |                               |
|------------------------------|-----------------------------|-------------------------------|
| Car Station                  | Retail and Strip Commercial | Open Space Reserves/Preserves |
| Car Service                  | Office Lo-Rise              |                               |
| 1/4 Mile Buffer              | Religious Facilities        |                               |
| 1/2 Mile Buffer              | Libraries                   |                               |
| Single Family Residential    | Senior High Schools         |                               |
| Multi Family Residential     | Junior High Schools         |                               |
| Mobile Home Parks            | Elementary Schools          |                               |
| Industrial Parks             | Other Recreation            |                               |
| Warehousing / Public Storage | Parks                       |                               |
| Junkyard/Dump/Landfill       | Vacant / Undeveloped        |                               |
| Communications / Utilities   | Undeveloped                 |                               |

Figure 7.8  
RC-1 Alignment  
4th Avenue and Orange Avenue Station

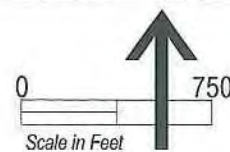




Station Location

RC 1 Alignment

Pedestrian Access to Station



**Figure 7.9**  
**RC-1 Alignment**  
**4th Avenue and Orange Avenue Station**

### C. Beyer Way and Main Street Station

The Beyer Way and Main Street Station is located in an area that currently has no significant activity center(s). The future redevelopment of this area should consist of more intensive land uses that will help in supporting the success of the proposed station.

Based on the transit priority treatments proposed for this area, it is anticipated that two curbside stations will best accommodate the alignment. One station will serve the westbound alignment and the other station will serve the eastbound alignment. The eastbound alignment will be located on the southwest side of Main Street thus requiring a far-side station. The westbound alignment could be served on the northwest side of Main Street again requiring a far-side station as shown in **Figure 7.10**.

#### ▪ **Right-of-Way Requirements**

The right-of-way requirements for a curbside station will be 15-feet x 150-feet along similar to the one shown in **Figure 1.6** of Chapter 1. These requirements will accommodate 15-foot boarding and alighting platforms and the length will allow service for multiple transit vehicles.

Currently a 10-12-foot wide parkway is provided at both locations. Additional right-of-way of 3 to 5-feet x 150-feet will be required for the proposed improvements. Also, currently on Main Street there are multiple curb cuts serving the businesses fronting the street on both sides. To achieve the 150-foot platform desired certain accesses to parcels will be eliminated. Final design of the stations at these locations will have to work in concert with future redevelopment planning efforts.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

Current land use within the station's ¼ mile radius includes a variety of low intensive land uses such as: junkyard / dump / landfill, commercial / retail, industrial parks, vacant / undeveloped area, single-family residential and open space, as illustrated in **Figure 7.11**.

Low-density single family residential uses compose the majority of uses within the station's ¼ mile radius. These residential areas are located primarily north of Main Street and a smaller pocket is located southeast of Main Street. Industrial parks make up the remainder of the station's ¼ mile radius and typically run one block north and south along the Main Street corridor. A mobile home park is located within a ½ mile of the station.

##### **Proposed (2020)**

Land uses proposed within a ¼ mile radius of the station will include the expansion of the industrial parks, intensifying the strip commercial / retail uses and adding to the open space / preserve areas located south of Main Street. Within the station's ½ mile radius, single-family housing will intensify and replace the existing mobile home parks as illustrated in **Figure 7.11**.

### **Opportunities**

Opportunities for mixed-use developments are needed to support this station and to make it more transit supportive. It is recommended that mixed-use opportunities occur near the Beyer Way and Main Street Station as shown in **Figure 7.11**. The mixed-use areas will be located both north and south of Main Street within a ¼ mile of the station. The mix of land uses north of the station will be predominately residential and supported by commercial / retail. The area south of Main Street is devoted to office or more intensive industrial type uses.

A need for more transit supportive uses is critical for this station to be successful and strengthen the "walk-up" capability. These future development opportunities should be built close to the street allowing integration of the station into the project design. Also, building these diverse uses along the street creates a more active streetscape making the walking experience more enjoyable.

### ▪ **Access**

The primary pedestrian access to the station will be from the surrounding area's existing streets and associated sidewalks. The residential neighborhood to the north of the station is designed in a grid pattern of inter-connecting streets that lead to Main Street. The continued use of the existing sidewalks associated with these streets will provide a direct and efficient link to the station.

Design improvements to the residential streetscape experience along Third Avenue could be implemented to enhance the pedestrian experience to the transit station. The use of pedestrian "bulb outs" where crossings occur at Main Street is another improvement that could be incorporated with the overall future station design.

With the future station in close proximity to high density residential and office uses, it is important that the pedestrian experience is safe and pleasant. This will encourage transit riders to walk to the station. In general it may be beneficial to improve the pedestrian access to the surrounding neighborhood with a comprehensive streetscape enhancement program. This program will be part of the overall station development plan and include the following streets as shown in **Figure 7.12**:

- Main Street
- Fourth Avenue
- Third Avenue
- Fifth Street

### ▪ **Beyer Way and Main Street Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- Currently a 10 to 12-foot wide parkway is provided at both locations. An additional right-of-way of 3 to 5-feet will be required for the proposed 15- foot wide station platform.

- On Main Street there are multiple curb cuts serving the businesses fronting the street on both sides. To achieve the 150-foot platform desired certain accesses to parcels will need to be eliminated.
- It is anticipated that the RC-1 alignment and associated station improvements will not occur until the area is redeveloped. Provisions for the transit stations should be incorporated into the planning and redesign at that time.

#### Environmental Issues

- A traffic and circulation study may be required to assess the impact that the transit priority signal will have on surround local traffic.

#### Community Issues

- No significant community issues are anticipated if the stations are developed as part of an overall redevelopment master plan.

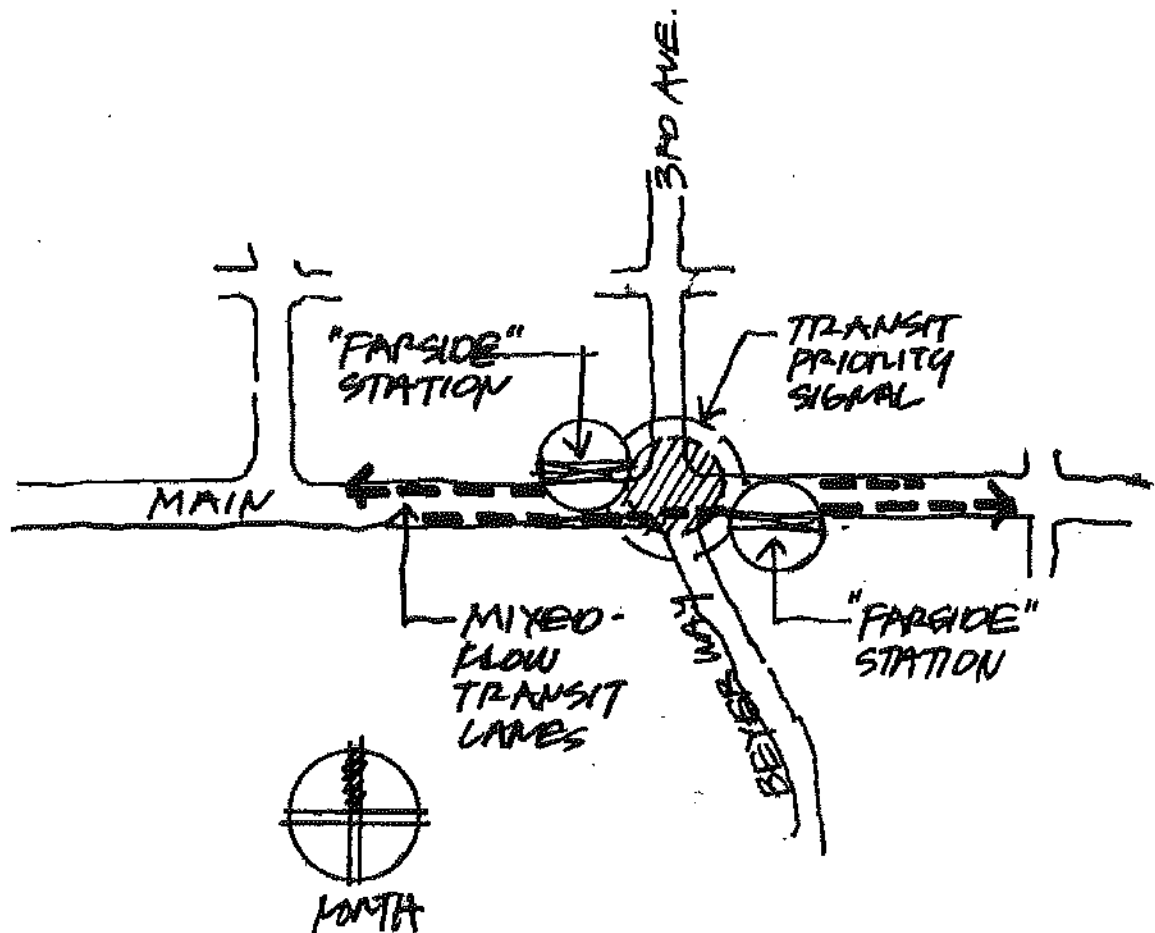
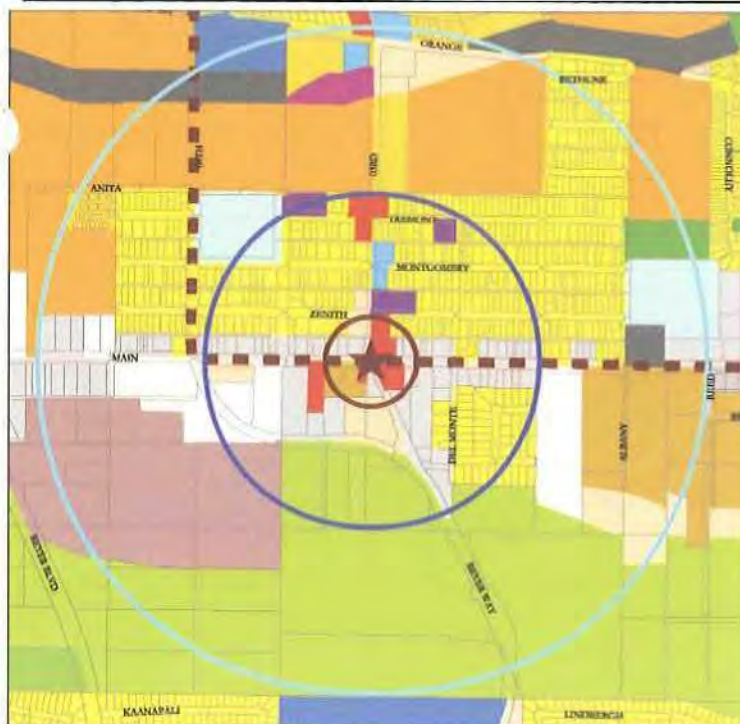


Figure 7.10  
Beyer Way and Main Street Station Location





EXISTING LAND USE



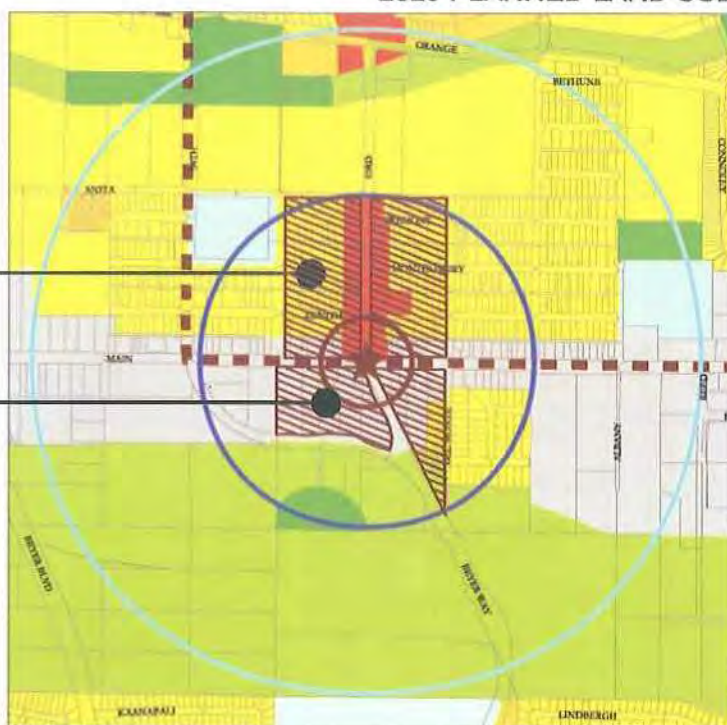
2020 PLANNED LAND USE

Mixed Use Opportunities

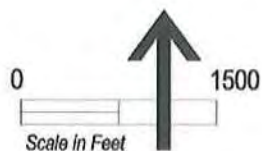
- Residential (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES

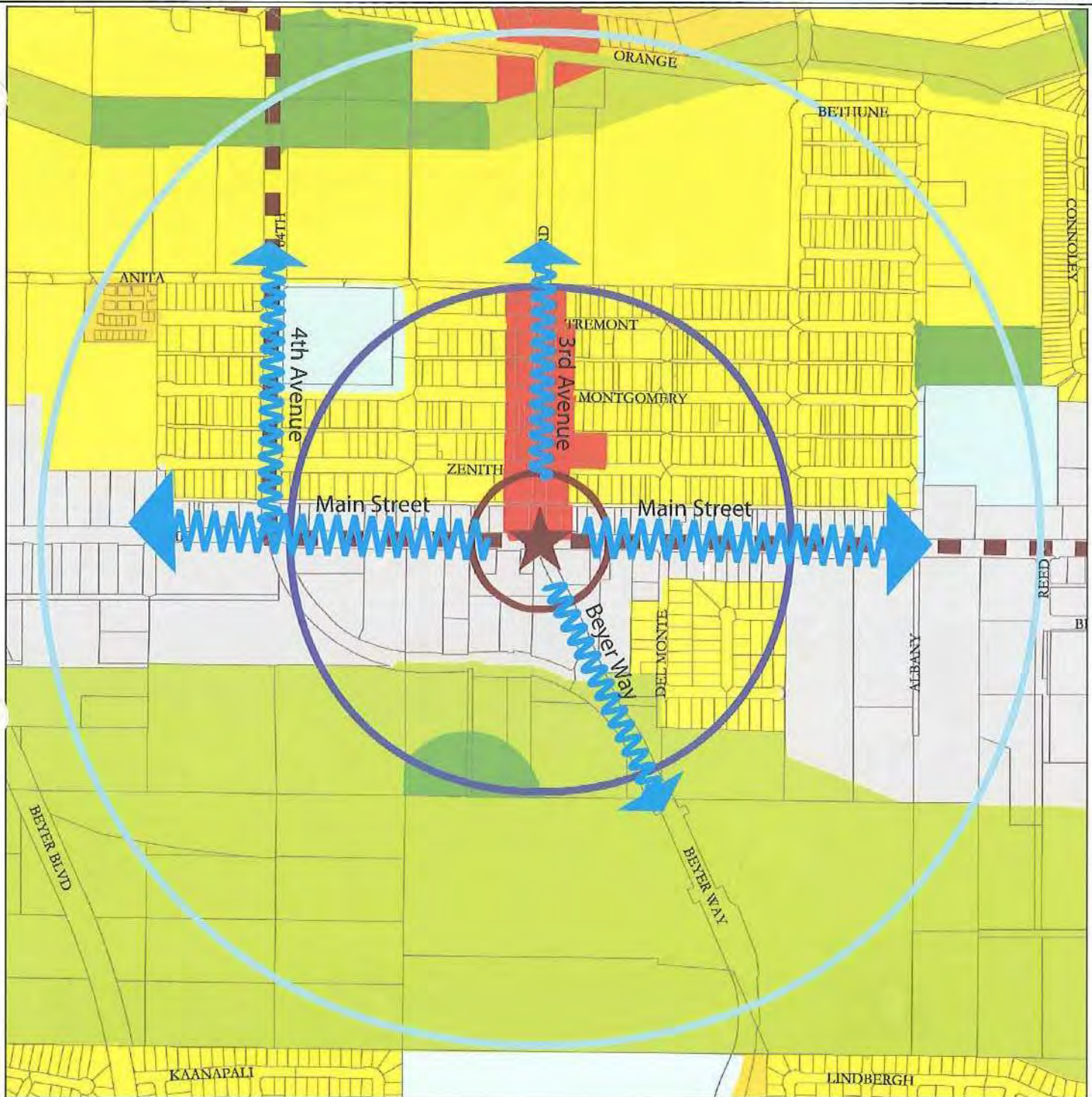


LAND USE LEGEND

|  |                              |  |                               |  |                      |
|--|------------------------------|--|-------------------------------|--|----------------------|
|  | Car Station                  |  | Junkyard/Dump/Landfill        |  | Vacant / Undeveloped |
|  | Car Service                  |  | Communications / Utilities    |  | Undeveloped          |
|  | 1/4 Mile Buffer              |  | Retail and Strip Commercial   |  |                      |
|  | 1/2 Mile Buffer              |  | Office Lo-Rise                |  |                      |
|  | Spaced Family Residential    |  | Religious Facilities          |  |                      |
|  | Single Family Residential    |  | Libraries                     |  |                      |
|  | Multi Family Residential     |  | Senior High Schools           |  |                      |
|  | Mobile Home Parks            |  | Elementary Schools            |  |                      |
|  | Industrial Parks             |  | Other Recreation              |  |                      |
|  | Warehousing / Public Storage |  | Parks                         |  |                      |
|  | Extractive Industry          |  | Open Space Reserves/Preserves |  |                      |

**Figure 7.11**  
**RC-1 Alignment**  
**Beyer Way and Main Street Station**



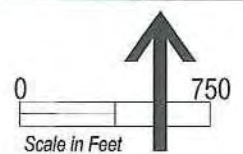


Station Location

RC 1 Alignment



Pedestrian Access to Station



**Figure 7.12**  
**RC-1 Alignment**  
**Beyer Way and Main Street Station**

#### **D. Albany Avenue and Main Street Station**

The Albany Avenue and Main Street station is located in an area that currently has no significant activity center(s). However, the area has been identified as a "Smart Growth" node in SANDAG's 2030 Mobility Plan. The area's future redevelopment should consist of more intensive land uses that help support the success of the proposed station.

Based on the transit priority treatments proposed for this area, it is anticipated that two curbside stations will best accommodate the alignment. One station will serve the westbound alignment and the other station will serve the eastbound alignment. The eastbound alignment will be located on the southeast side of Main Street station thus requiring a far-side station. The westbound alignment will be located on the northwest side of Main Street again requiring a far-side station. Both station locations are shown in **Figure 7.13**.

##### ▪ **Right-of-Way Requirements**

The stations will be at curbside similar to the one shown in **Figures 1.6**. The right-of-way requirements for each curbside station along Main Street will be 15-feet by 150-feet. These requirements will accommodate 15-foot boarding and alighting platforms for each station and the length will serve multiple transit vehicles.

With an existing 10-foot wide parkway on the north side of Main Street an additional 5-feet of right-of-way may be required for the proposed improvements. The south side of Main Street appears to have a 12-foot right-of-way. Only 3-feet of additional right-of-way will be needed. In both cases providing the 150-foot long platform will eliminate access to certain parcels (homes and businesses) fronting Main Street. Final design of the stations at these locations will have to work in concert with future redevelopment planning efforts.

##### ▪ **Land Use Integration**

###### **Existing (1999)**

The existing uses at the intersection of the proposed station include the Otay Recreational Center to the northeast, light industrial and auto commercial uses to the south and an electrical substation and commercial / residential uses to the northwest. An elementary school is also located within the station's ¼ mile radius. Land use maps indicate that this area is comprised mostly of single family residential uses, industrial uses and open space / preserve area as shown in **Figure 7.14**.

###### **Proposed (2020)**

The proposed land uses will increase the light industrial along the south and north side of Main Street. In general, the area will consist of a mix of industrial park, single family residential and open space / preserves within the station's ¼ mile radius. Increases in strip commercial / retail uses are also proposed and are illustrated in **Figure 7.14**.

**Opportunities**

Developing more intensive mixed-uses should be a priority at this station location. The proposed 2020 land use plan illustrates a significant change to industrial type uses while maintaining the same residential intensity. However, it may be appropriate to increase the residential base and provide a larger employment base by incorporating additional office type uses as illustrated in **Figure 7.14**. Retail and / or commercial uses could also be proposed facing Main Street.

- **Access**

The primary access to the station is from the surrounding area's existing streets and associated sidewalks. The residential neighborhood to the north and the mixed-use areas to the south of the station are designed in a grid pattern of connecting streets leading to the station. Developing strong north / south pedestrian connections to the station should be considered. The use of the existing sidewalks associated with these streets will provide direct and efficient pedestrian links to the station.

Design improvements to the residential streetscape experience along Albany Avenue and Banner Avenue could be implemented to enhance the pedestrian experience to the transit station. The use of pedestrian "bulb outs" where crossings occur at Main Street is another improvement that could be incorporated with the overall future station design.

With the station in close proximity to higher density residential and office uses, it is important that the pedestrian experience is safe and pleasant. This will encourage transit riders to walk to and from the station. In general it may be beneficial to improve the pedestrian access to the surrounding neighborhood with a comprehensive streetscape enhancement program. This program will be part of the overall station development plan and include the following streets as shown in **Figure 7.15**:

- Main Street
- Banner Avenue
- Hilltop Drive
- Albany Avenue
- Date Street
- Third Avenue / Beyer Way

- **Albany Avenue and Main Street Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- Currently a 10-foot wide parkway is provided on the north side of Main Street and a 12-foot wide parkway on the south side. Additional right-of-way of 3 to 5-feet will be required for the proposed 15- foot wide station platforms.



- In both cases providing the 150-foot long platform eliminates access to certain parcels (homes and businesses) fronting Main Street.
- It is anticipated that the RC-1 alignment and associated station improvements will not occur until the area is redeveloped. Provisions for the transit stations should be incorporated into the planning and redesign at that time.

#### Environmental Issues

- A traffic and circulation study may be required to assess the impacts that the transit priority signal will have on surround local traffic.

#### Community Issues

- No significant community issues are anticipated if the stations are developed as part of an overall redevelopment master plan.

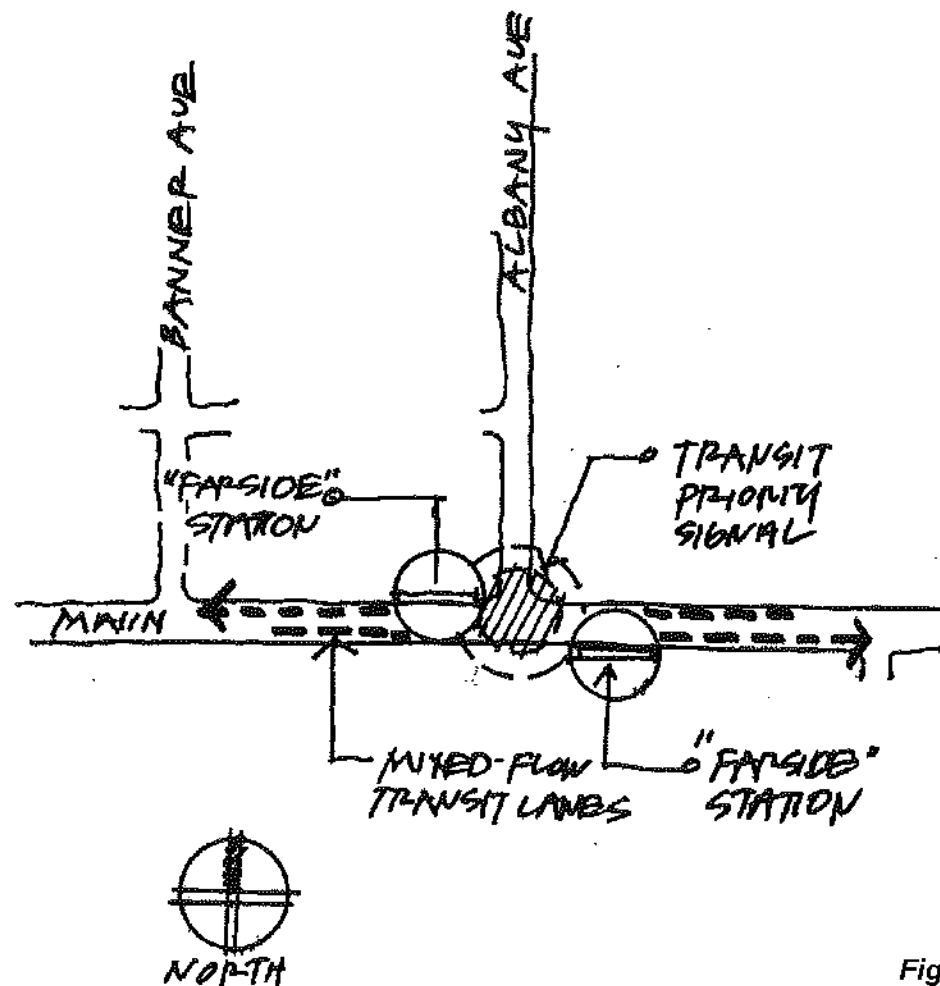


Figure 7.13  
Albany Avenue and Main Street Station Location



EXISTING LAND USE



2020 PLANNED LAND USE



OPPORTUNITIES

Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

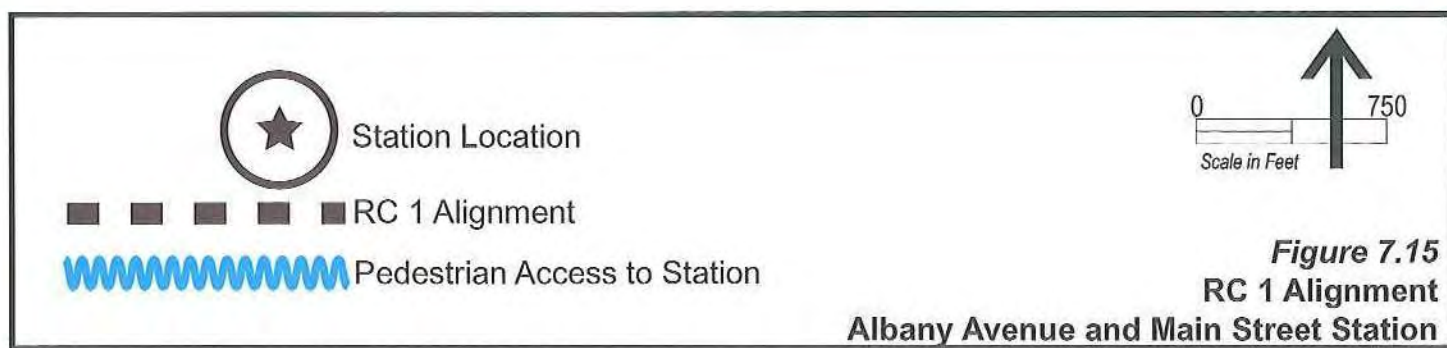
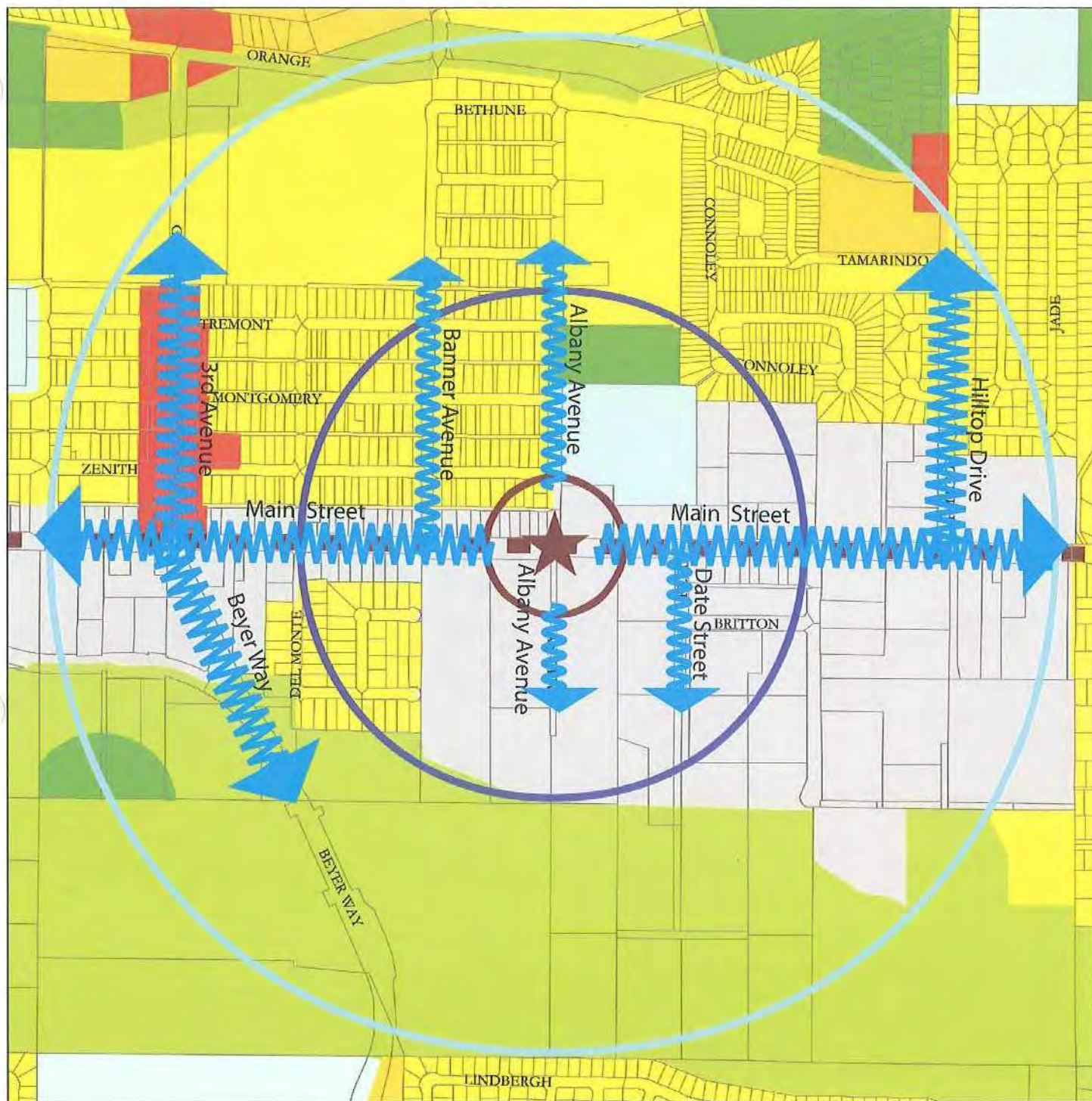
- Office (Primary)
- Commercial (Secondary)

**LAND USE LEGEND**

|                              |                               |             |
|------------------------------|-------------------------------|-------------|
| Car Station                  | Junkyard/Dump/Landfill        | Undeveloped |
| Car Service                  | Communications / Utilities    |             |
| 1/4 Mile Buffer              | Retail and Strip Commercial   |             |
| 1/2 Mile Buffer              | Office Lo-Rise                |             |
| Spaced Rural Residential     | Religious Facilities          |             |
| Single Family Residential    | Senior High Schools           |             |
| Multi Family Residential     | Elementary Schools            |             |
| Mobile Home Parks            | Other Recreation              |             |
| Industrial Parks             | Parks                         |             |
| Warehousing / Public Storage | Open Space Reserves/Preserves |             |
| Extractive Industry          | Vacant / Undeveloped          |             |

**Figure 7.14**  
**RC-1 Alignment**  
**Albany Avenue and Main Street Station**





### **E. Interstate 805 and Main Street Station**

This station is located in an area that currently has no significant activity center(s). However, the area has been identified as a "Smart Growth" node in SANDAG's 2030 Mobility Plan. The area's future redevelopment should consist of more intensive land uses that will help support the success of the proposed station.

Based on the transit priority treatments proposed for this area, it is anticipated that two curbside stations will best accommodate the alignment. One station will serve the westbound alignment and the other station will serve the eastbound alignment. The eastbound alignment will be located on the southeast side of Main Street and I-805 thus requiring a far-side station. The westbound alignment could be served on the northwest side of Main Street and I-805 again requiring a far-side station. Because of the Interstate 805 Interchange width the stations will be located approximately 600 to 700-feet from each other as illustrated in **Figure 7.16**.

#### ▪ **Right-of-Way Requirements**

The stations will be curbside as shown in **Figures 1.6**. The right-of-way requirements for a curbside station along Main Street will be 15-feet x 150-feet. These requirements will accommodate 15-foot boarding and alighting platforms and the length will serve multiple transit vehicles.

With an existing 12-foot wide parkway on both the north and the south side of Main Street an additional 6-feet of right-of-way (3-feet for each side) may be required for the proposed station improvements. On the north side of Main Street providing the 150-foot long platform appears feasible with out eliminating access. However, retaining walls may be needed to allow for the station platform due to steep slope bank located near the street. On the south side the current conditions will allow almost 150-feet for the station platform before reaching a curb cut or driveway. Final design for the station on the south side of Main Street and I-805 should work in concert with future redevelopment efforts.

#### ▪ **Land Use Integration** **Existing (1999)**

The existing land use map for this area is illustrated in **Figure 7.17**. The existing uses within a ¼ mile of the proposed station are comprised of commercial / strip retail, light industrial, vacant land, multi-family residential and single family residential uses. Existing uses within the station's ½ mile radius include a mix of open-space preserves, multi-family residential and single family residential.

#### **Proposed (2020)**

The land uses proposed for this area will increase the light industrial uses southeast of Interstate 805 and the strip retail / commercial to the southwest of the station as illustrated in **Figure 7.17**. Single family and multi-family residential uses will remain the same as under the existing land use map.

#### **Opportunities**

The Interstate 805 and Main Street Station location is being proposed as a "Smart Growth" location and the development of more intensive mix of uses should be a



priority near these stations. The proposed 2020 land use plan illustrates a significant change to industrial type uses while maintaining the same residential intensity. However, it may be appropriate to increase the residential base and provide a larger employment base by incorporating additional office type uses as illustrated in **Figure 7.17**. Retail and / or commercial uses with storefronts facing Main Street and may also be appropriate.

▪ **Access**

Direct pedestrian access to the station will be critical for its success. The surrounding residential areas to the north are isolated by topography are accessible by one or two residential streets connecting to Main Street. Also, the Interstate 805 Interchange is a physical barrier that will affect pedestrian access and the station locations.

It will be necessary to develop a strong, safe and pleasant pedestrian connection along Main Street in order to provide pedestrian access to the station. As future redevelopment is considered south of Main Street multiple pedestrian accesses to the stations should be reviewed. In general it may be beneficial to improve the pedestrian access to the surrounding neighborhood with a comprehensive streetscape enhancement program. This program will be part of the overall station development plan including the following streets as illustrated in **Figure 7.18**:

- Main Street
- Oleander Avenue
- Melrose Avenue

▪ **Interstate 805 and Main Street Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- An existing 12-foot wide parkway on both the north and the south side of Main Street 3-feet of right-of-way for each side may be required for the proposed station improvements.
- On the north side of Main Street providing the 150-foot long platform appears feasible with retaining walls due to steep slope bank located near the street.
- On the south side the current conditions will allow almost 150-feet for the station platform before reaching a curb cut or driveway.
- It is anticipated that the RC-1 alignment and associated station improvements will not occur until the area is redeveloped. Provisions for the transit stations should be incorporated into the planning and redesign at that time.

**Environmental Issues**

- A traffic and circulation study may be required to assess the impact that the transit priority signal will have on surround local traffic.

## Community Issues

- No significant community issues are anticipated if the stations are developed as part of an overall redevelopment master plan.

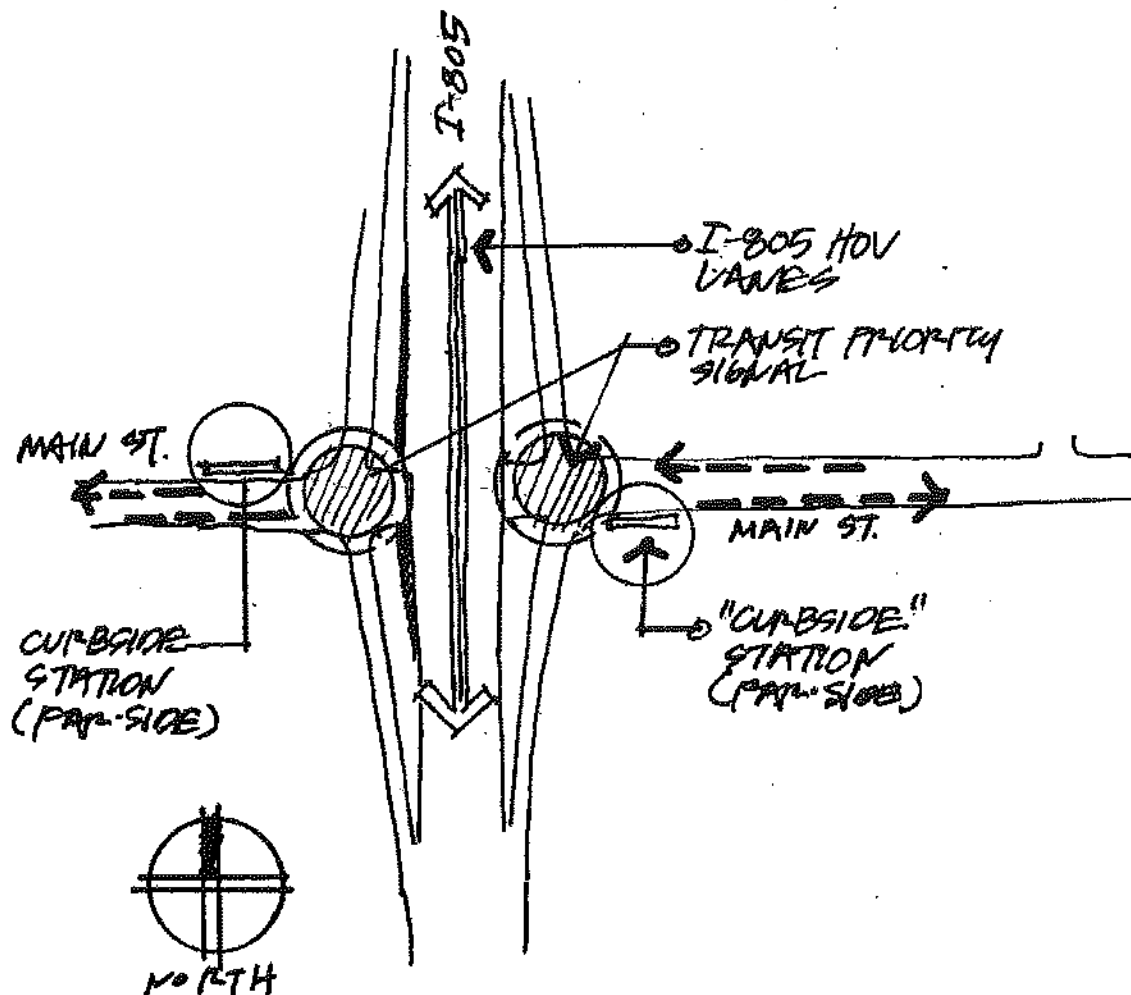


Figure 7.16  
Interstate 805 and Main Street Station Location



EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

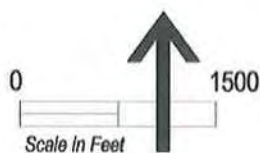
- Residential (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Office (Primary)
- Commercial (Secondary)



OPPORTUNITIES



LAND USE LEGEND

- |                             |                                      |
|-----------------------------|--------------------------------------|
| Car Station                 | Other Health Care                    |
| Car Service                 | Other Recreation                     |
| 1/4 Mile Buffer             | Elementary Schools                   |
| 1/2 Mile Buffer             | Parks                                |
| Single Family Residential   | Open Space Reserves/Preserves        |
| Multi Family Residential    | Landscape Open Space                 |
| Hotel/Motel Lo-Rise         | Agriculture / Orchards and Vineyards |
| Industrial Parks            | Vacant / Undeveloped                 |
| Freeways / Roads            | Undeveloped                          |
| Retail and Strip Commercial |                                      |

**Figure 7.17**  
RC-1 Alignment  
Interstate 805 and Main Street Station





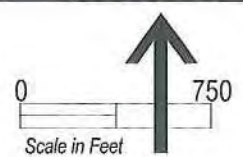
Station Location



RC 1 Alignment



Pedestrian Access to Station



**Figure 7.18**  
**RC-1 Alignment**  
**Interstate 805 and Main Street Station**



## **F. Heritage Road and Main Street Station**

This station is located within the planning area of Otay Ranch where ongoing conceptual planning is being coordinated with the City of Chula Vista and Otay Ranch. Location of a transit facility or station in this area is being considered as part of this effort and will depend on the final outcome of these planning and circulation studies.

- **Right-of-Way Requirements**

*The right-of-way requirements for this station should provide a minimum of 15-feet x 150-feet similar to those illustrated in **Figure 1.6** of Chapter 1.*

- **Land Use Integration**

*The Heritage Road and Main Street Station will be located in an area of Otay Ranch that is currently in the planning process. Existing, proposed and land use integration opportunities will be provided by the City of Chula Vista for future implementation.*

- **Access**

*Pedestrian access to the station will be taken into consideration during the planning process for this area.*

- **Heritage Road and Main Street Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

### **Engineering Issues**

- At this time no significant engineering issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

### **Environmental Issues**

- At this time no significant environmental issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

### **Community Issues**

- At this time no significant community issues are anticipated.

**G. Rock Mountain Road and La Media Road Station**

This station is located within the planning area of Otay Ranch. There is an ongoing conceptual planning being coordinated with the City of Chula Vista and Otay Ranch. Location of a transit facility or station in this area is being considered as part of this effort and will depend on the final outcome of these planning and circulation studies.

▪ **Right-of-Way Requirements**

The right-of-way requirements for this station should provide a minimum of 15-feet x 150-feet similar to those illustrated in **Figure 1.6** of Chapter 1.

▪ **Land Use Integration**

The Rock Mountain Road and La Media Road Station will be located in an area of Otay Ranch that is currently in the planning process. Existing, proposed and land use integration opportunities will be provided by the City of Chula Vista for future implementation.

▪ **Access**

Pedestrian access to the station will be taken into consideration during the planning process for this area.

▪ **Rock Mountain Road and La Media Road Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- At this time no significant engineering issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

**Environmental Issues**

- At this time no significant environmental issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

**Community Issues**

- At this time no significant community issues are anticipated.

## **H. University or Village 9 Station**

The Village 9 Station will be located within the planning area of Otay Ranch where ongoing conceptual planning is being coordinated with the City of Chula Vista and Otay Ranch. Location of a transit facility or station in this area is being considered as part of the City's and the developer's planning efforts and will depend on the final outcome of their planning and circulation studies and the interchange locations for SR-125.

- **Right-of-Way Requirements**

The right-of-way requirements for each station should provide a minimum of 15-feet x 150-feet similar to those illustrated in **Figure 1.6** of Chapter 1.

- **Land Use Integration**

The University or Village 9 Station will be located in an area of Otay Ranch that is currently in the planning process. Existing, proposed and land use integration opportunities will be provided by the City of Chula Vista for future implementation.

- **Access**

Pedestrian access to the station will be taken into consideration during the planning process for this area.

- **University or Village 9 Station Issues**

For the propose Village 9 Station located on La Media Road the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- At this time no significant engineering issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.

**Environmental Issues**

- At this time no significant environmental issues can be identified until the station location has been determined through the planning process by the developer and the City of Chula Vista.
- The location of the SR-125 interchange that would serve Village 9 is proposed for Rock Mountain Road. As currently designed this location would require the transit station to be at the northern most edge of Village 9. This location would not serve the village activity center proposed for the center of the development. The alignment should travel through the planning area and access SR-125 at the southwestern edge of the development area. This would then require an interchange at this location to access SR-125. This location would be similar to the one previously proposed at Main Street and SR-125.

**Community Issues**

- At this time no significant community issues are anticipated.

## **I. Eastern Urban Center (EUC) Station**

The Eastern Urban Center (EUC) Station is intended to be situated within the middle of the EUC. The EUC is proposed as a major mix use center and will be comprised of a variety of intensive land uses. The current station location is being initiated by the developers of the EUC site. The alignment will be within a median running transit lane on Spine Road which is being designed as a major transit corridor.

The station will have to accommodate multiple Red, Blue and Green Car alignments and provide transfer capabilities. This station should be considered as a major transit hub serving the Tier I alignments of the RC-1, 627, and 694.

Continued coordination and cooperation with the City of Chula Vista, the developer of the EUC, and MTDB will be needed to ensure that the transit station requirements are met. MTDB should continue to provide site-specific design requirements to the developers, as the planning studies for the EUC are prepared.

### **▪ Land Use Integration**

The EUC site is currently being planned and the "existing" land uses will be similar to that shown in the proposed land use plan for 2020. Current planning efforts involve a significant mixed-use center that will be located adjacent to the proposed station site. This EUC mixed-use center is intended to be a major focal point for Otay Ranch. The mix of land uses will be comprised of regional commercial, office, and residential uses. In addition, there is a significant amount of residential development proposed for Village 11 within ¼ mile of the EUC station. All of the above mentioned uses will be very transit supportive.

No additional land use recommendations are proposed at this time since planning studies are currently being prepared. Coordination efforts with the developer of the EUC, City of Chula Vista, and MTDB should continue. These coordination efforts will ensure that the mix of land uses, intensity of land uses and land use integration with the transit station occurs at this location.

### **▪ Access**

The EUC Station location will be well sited to take advantage of the proposed mix of land uses and provide "front-door" access. With final design the pedestrian environment could be very strong allowing transit riders to walk directly to many of the proposed uses. Care should also be given to allow for direct pedestrian access to Village 11.

### **▪ EUC Station Issues**

For the proposed EUC Station located in Otay Ranch the following are possible issues affecting the implementation of station improvements.

#### **Engineering Issues**

- This station should be already developed by the time that the RC-1 alignment is implemented. Provisions for bay and platform for the RC-1 should be considered



as well as for other Green, Red, Blue and Yellow Car alignments sharing the station.

- The City of Chula Vista, MTDB and the developers will need to coordinate the needs and size of the station as the EUC is planned and developed.

***Environmental Issues***

- No significant environmental issues are anticipated. A traffic study may be needed to assess the impact the transit service has on local traffic.

***Community Issues***

- The EUC has always been planned as the location for a major transit hub. The planning process with the developer, MTDB, and the City of Chula Vista should continue to insure that the transit requirements are met. No significant community related issues for the station design are anticipated at this time.

### **J. Freeway Oriented Commercial (FOC) or Village 11 Station**

The Freeway Oriented Commercial (FOC) or Village 11 Station will be situated within the FOC site. This station will include a "park and ride" facility consisting of approximately 200 cars. The current location identified by the FOC site developers is illustrated in **Figure 7.19**. The alignment will be located within the median of Spine Road. The station will be developed as an on-grade station with shared use of the 694 alignment.

The general area for this station is within the proposed parking lot of the commercial development flanked on both sides by the park and ride parking area. Only one station location is proposed to serve both the RC-1 and the 694 routes. The station at the FOC will be a median type allowing with boarding occurring on both sides of the median.

#### ▪ **Right-of-Way Requirements**

The right-of-way requirements for the on-grade station will be approximately 54-feet x 150-feet. These requirements will accommodate 24 feet wide dual median running travel lanes with 15 foot boarding and alighting platforms located on both sides. The requirements will be similar to those shown in **Figure 1.9**.

Provisions for the 200-space surface "park and ride" facility will be an integral part of the station requirements. The "park and ride" facility should be located as close to the station as possible and within easy walking and viewing distance for the transit riders. The park and ride facility and the station will require approximately 1.8 to 2.0 acres.

#### ▪ **Land Use Integration**

The FOC site is not developed to date but is currently being planned. The proposed uses will be similar to the Proposed Land Uses for 2020. The current planning for this site includes a significant retail commercial center with freeway exposure and access. The site will consist of predominately "big-box" commercial tenants similar to Costco, Sam's Club or Home Depot.

These types of commercial developments rely heavily on freeway exposure and have significant parking requirements. The "big-box" commercial tenants and their associated parking needs will not be conducive to a pedestrian oriented environment necessary for a transit station. However, since a "park and ride" lot has been identified for this site, the transit station can be appropriately integrated into the proposed project allowing for commuter service without impacts to the commercial tenants.

#### **Proposed Land Uses (2020)**

See above.

#### **Opportunities**

It will be difficult to achieve the type of land use integration that is the goal of Transit First for the FOC site. Modifying the type of land uses to allow for better integration and transit supportive capability is not feasible or practical. However, the station

could benefit by attracting transit patrons from Village 11. Offering closer pedestrian access to the Village 11 residential neighborhood should be considered as development plans are prepared.

▪ **Access**

The station location is well sited to take advantage of the proposed park and ride facility, but not the surrounding and varied land uses outside of the FOC. However, the station will rely heavily on the park and ride facility instead of the surrounding land uses and neighboring villages for its ridership. The pedestrian environment needs to be strong and well defined if it is expected to attract potential walk-up riders through the large parking lots.

However, to encourage pedestrian access from surrounding neighborhoods, particularly Village 11, significant pedestrian improvements in the FOC are needed to encourage potential riders to walk to the station.

▪ **Freeway Oriented Commercial Station Issues**

For the proposed FOC Station located in Otay Ranch the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- A median transit station will have to take pedestrian safety and accessibility into consideration. This may require some type of pedestrian activated signal that allows for a mid-block crossing.
- A transit priority signal is needed to allow transit vehicles to enter and exit the station. This signal may also be used to allow pedestrian crossings to the median station.

**Environmental Issues**

- A traffic and circulation study may be needed to determine the impacts a mid-block transit signal may have on the traffic flow along the "Spine Road" and other transit priority signalization.

**Community Issues**

- No significant community issues are anticipated.

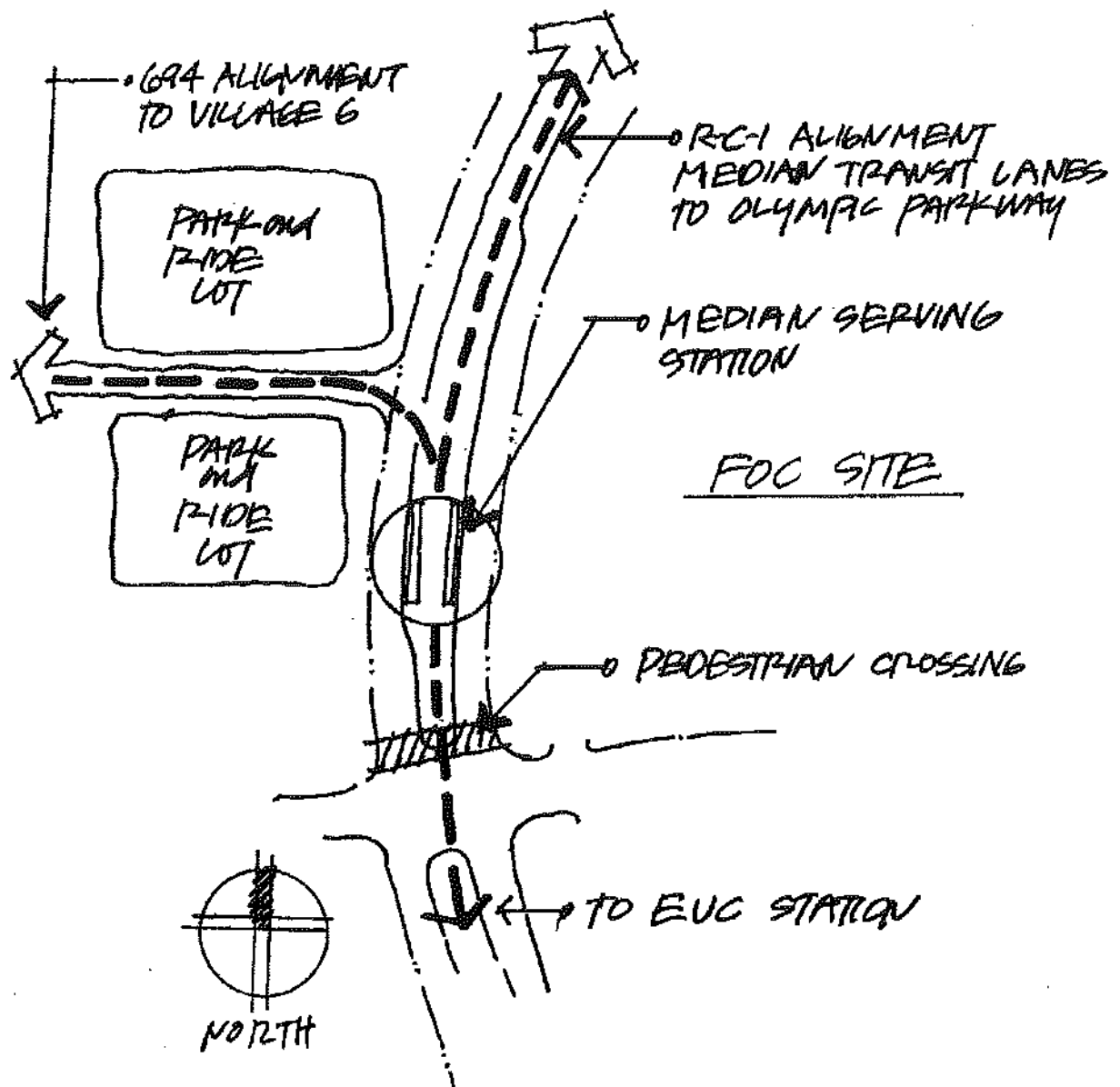


Figure 7.19  
Freeway Oriented Commercial Station Location



## **K. Eastlake Parkway Station**

The Eastlake Parkway Station will have two curbside serving platforms. The station serving the southbound alignment will be located on the southwest side of Eastlake Parkway thus requiring a far-side station. The station serving the northbound alignment will be located on the northeast side of Eastlake Parkway again requiring a far-side station as shown in **Figure 7.20**. The location of this station will be able to serve the residential community to the east of the station and also the commercial center on the west side of Eastlake Parkway.

### ▪ **Right-of-Way Requirements**

The stations will be curbside similar to those shown in **Figures 1.6**. The right-of-way requirements for each station located along Eastlake Parkway will be 15-feet x 150-feet. These requirements will accommodate 15-foot boarding and alighting platforms and the length will serve multiple transit vehicles if necessary. No additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the adjacent landscaped setbacks.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The existing land use map for this area is illustrated in **Figure 7.21**. The existing uses within a ¼ mile of the proposed station are primarily vacant. However, the Otay Ranch and Eastlake areas are rapidly being developed and both residential and commercial uses will be in place in the near future.

#### **Proposed (2020)**

The proposed uses will reflect an increase in commercial and residential uses as illustrated in **Figure 7.21**.

#### **Opportunities**

The stations are located in close proximity to multi-family residential developments proposed to the east and a proposed commercial center to the west. In the future land uses could intensify to provide additional transit supportive possibilities. However, this intensification will depend on recent projects being redeveloped for completion by / or after 2020.

### ▪ **Access**

Existing streets and their associated sidewalks provide primary access to the station from the surrounding area as illustrated in **Figure 7.22**. The residential neighborhood to the east and the commercial area to the west have good access to the station. Developing a strong north / south pedestrian connection to the station should also be considered to link into surrounding residential areas. The use of the existing sidewalks associated with these streets will provide direct and efficient pedestrian links to the station.

Currently the surrounding streets leading to the station are proposed to have sidewalks and are pleasantly landscaped. Future improvements may be needed to ensure that current conditions are maintained when the RC-1 is implemented.

▪ **Eastlake Parkway Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- There should be no significant engineering issues associated with this station. As stated earlier, no additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the adjacent landscaped setbacks.
- Initial discussions with the City of Chula Vista regarding the area requirements for the station appear to present no significant issues.

***Environmental Issues***

- A traffic and circulation study may be needed to determine if any impacts may be associated with the intersections for the Eastlake Land Swap parcel due to the proposed transit priority signals on Eastlake Parkway.

***Community Issues***

- No significant community issues are anticipated.

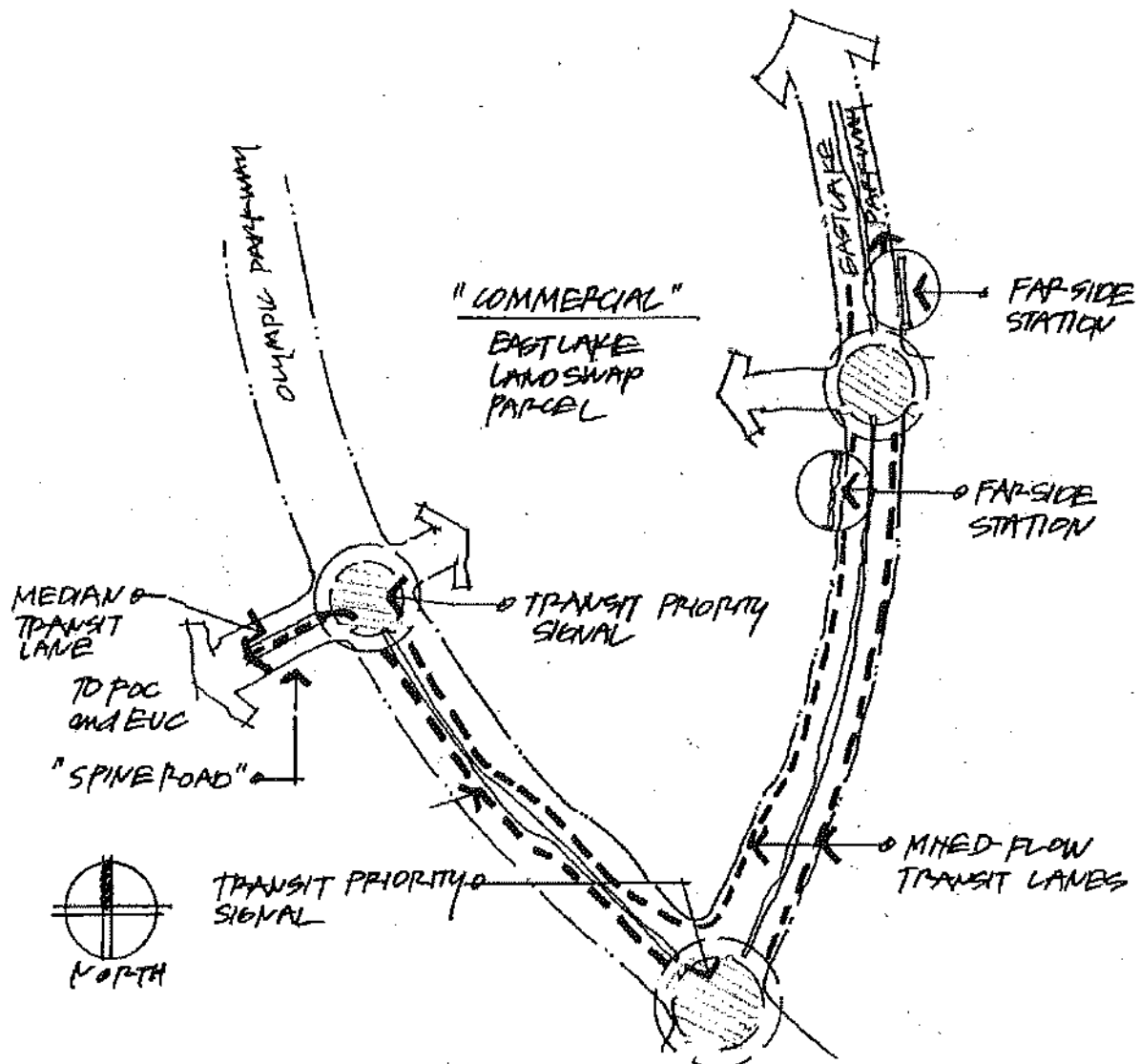
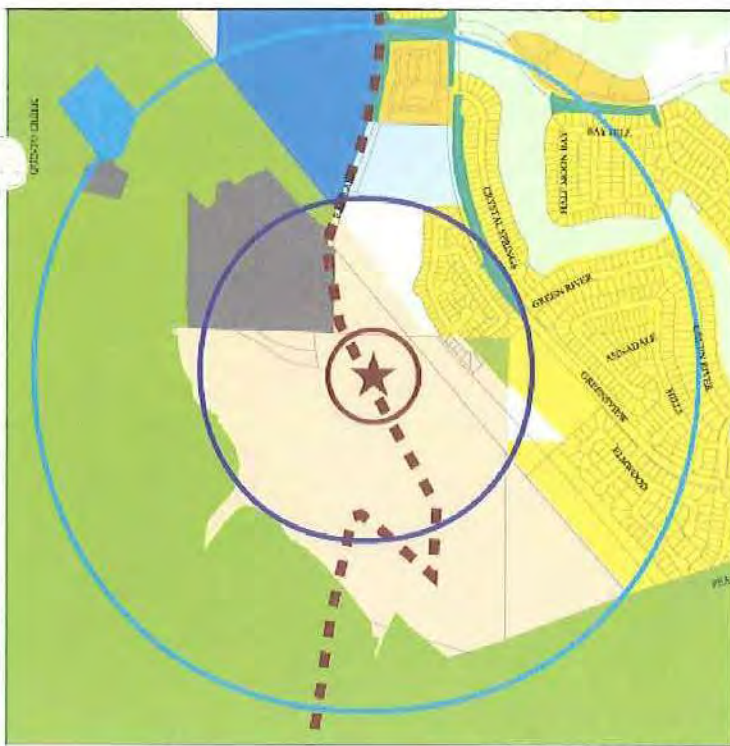


Figure 7.20  
Eastlake Parkway Station Location



EXISTING LAND USE

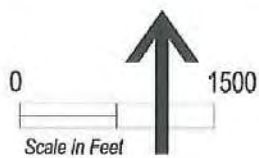


2020 PLANNED LAND USE

NOTE:  
No Opportunities Proposed At This Time



OPPORTUNITIES

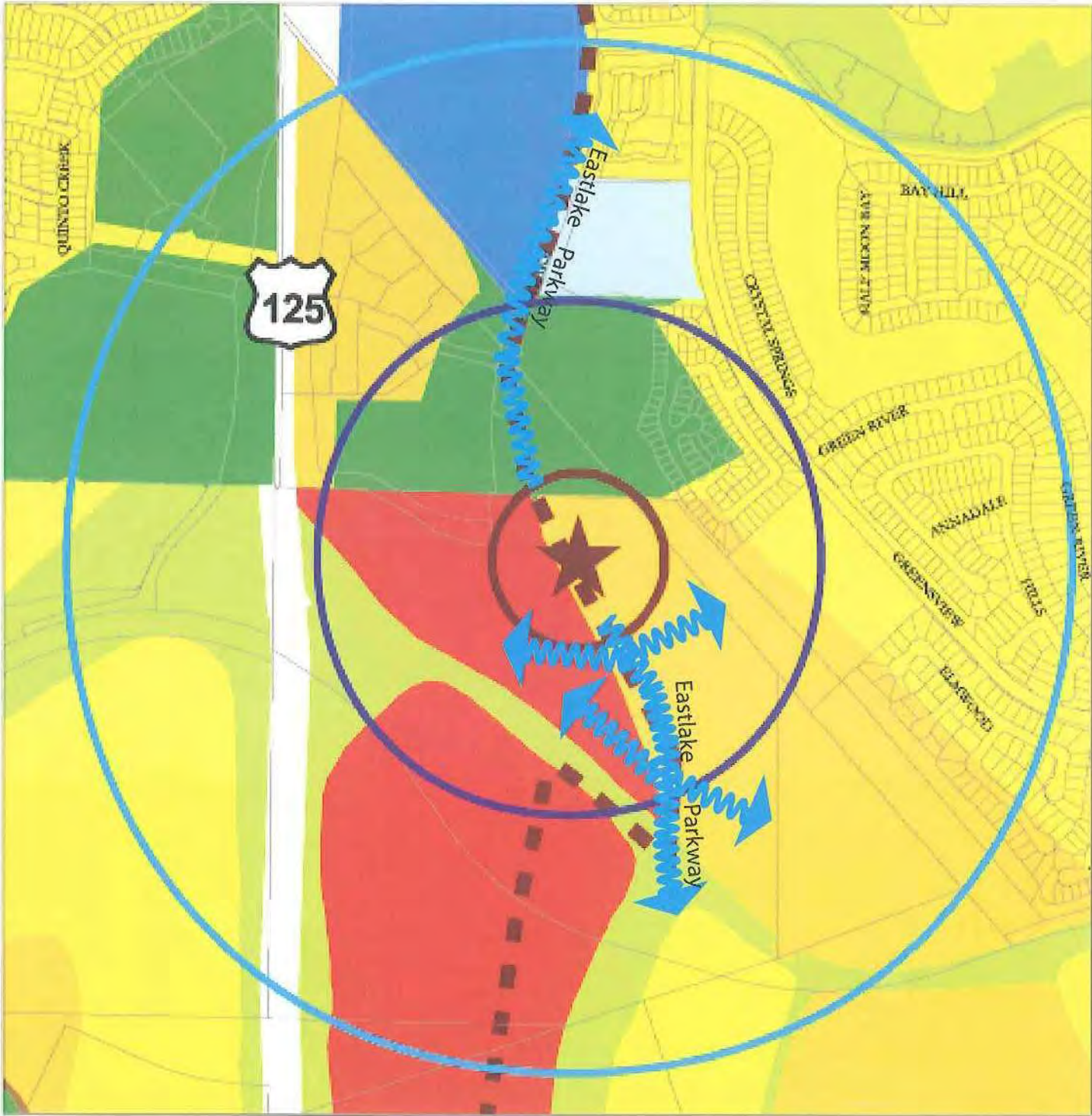


### LAND USE LEGEND

- |                             |                                      |
|-----------------------------|--------------------------------------|
| Car Station                 | Open Space Reserves/Preserves        |
| Car Service                 | Parks                                |
| 1/4 Mile Buffer             | Vacant / Undeveloped                 |
| 1/2 Mile Buffer             | Undeveloped                          |
| Single Family Residential   | Water Bodies                         |
| Multi Family Residential    | Agriculture / Orchards and Vineyards |
| Communications / Utilities  | Landscape Open Space                 |
| Retail and Strip Commercial | Mixed Use                            |
| Office Lo-Rise              | Golf Courses                         |
| Senior High Schools         |                                      |
| Elementary Schools          |                                      |

**Figure 7.21**  
**RC-1 Alignment**  
**Eastlake Parkway Station**





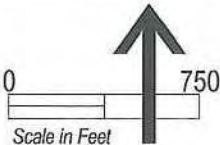
Station Location



RC 1 Alignment



Pedestrian Access to Station



**Figure 7.22**  
**RC-1 Alignment**  
**Eastlake Parkway Station**

## **L. Eastlake Parkway and Clubhouse Drive**

Based on the priority treatment recommended for Eastlake Parkway two curbside stations will be provided at this location. The southbound alignment will be served on the southwest side of Eastlake Parkway thus requiring a far-side type station. The northbound alignment could be served on the northeast side of Eastlake Parkway again requiring a far-side station as illustrated in **Figure 7.23**.

### ▪ **Right-of-Way Requirements**

The stations will be curbside similar to those shown in **Figures 1.6** of Chapter 1. The right-of-way requirements for each station located along Eastlake Parkway will be 15-foot x 150-foot. These requirements will accommodate 15-foot boarding and alighting platforms and the length will serve multiple transit vehicles if necessary. No additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the existing landscaped setbacks.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The Eastlake Parkway and Clubhouse Drive Station is located in an area that has been recently developed. The "existing" land uses will be similar to what is shown in the proposed land uses for 2020. The current planning efforts involve a curbside station in the area adjacent to the proposed station site. Proposed land uses within the station's  $\frac{1}{4}$  and  $\frac{1}{2}$  mile radius includes parks, elementary and high schools, single family residential, and commercial / retail uses as illustrated in **Figure 7.24**.

#### **Proposed (2020)**

See above.

#### **Opportunities**

The stations are located in close proximity to single-family residential development to the east and a high school to the west. In the future, land uses could intensify to provide additional transit supportive possibilities. However, this intensification will depend on redevelopment projects scheduled for completion by / or after 2020. It may or may not be feasible to expect this type of redevelopment activity within such a short time frame. No land use opportunities are proposed at this time.

### ▪ **Access**

This station is well sited to be accessible to the high school and the existing single family residential uses to the east of the station. Pedestrian access will be vital to this station since only walk-up transit riders are expected. Strong links to the residential areas as well as the schools should be provided. Primary pedestrian access will be provided along Clubhouse Drive and Eastlake Parkway as illustrated in **Figure 7.25**.

### ▪ **Eastlake Parkway and Club House Drive Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

**Engineering Issues**

- There should be no significant engineering issues associated with this station. As stated earlier, no additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the adjacent landscaped setbacks.

**Environmental Issues**

- A traffic and circulation study may be needed to determine if any impacts may be associated with the intersection of Club House Drive Eastlake High School due to the proposed transit priority signals on Eastlake Parkway.

**Community Issues**

- No significant community issues are anticipated.

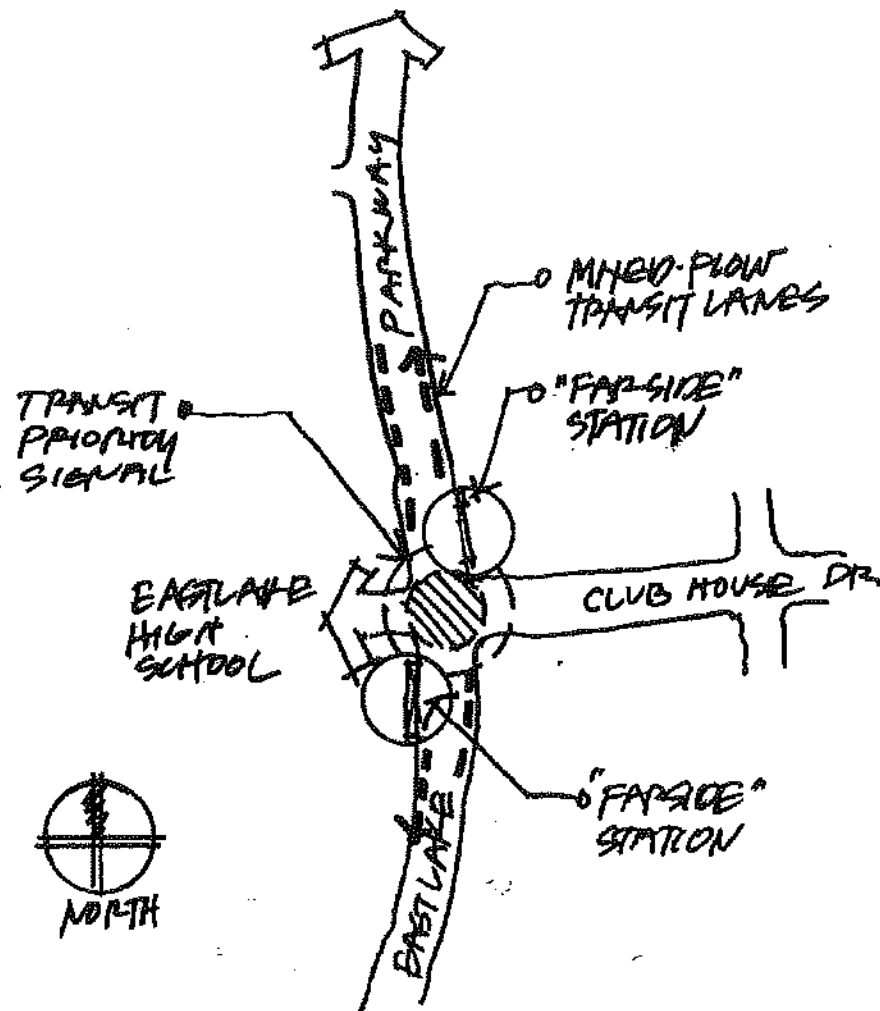


Figure 7.23  
Eastlake Parkway and Clubhouse Drive Station Location



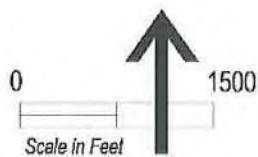


EXISTING LAND USE



2020 PLANNED LAND USE

NOTE:  
No Opportunities Proposed At This Time



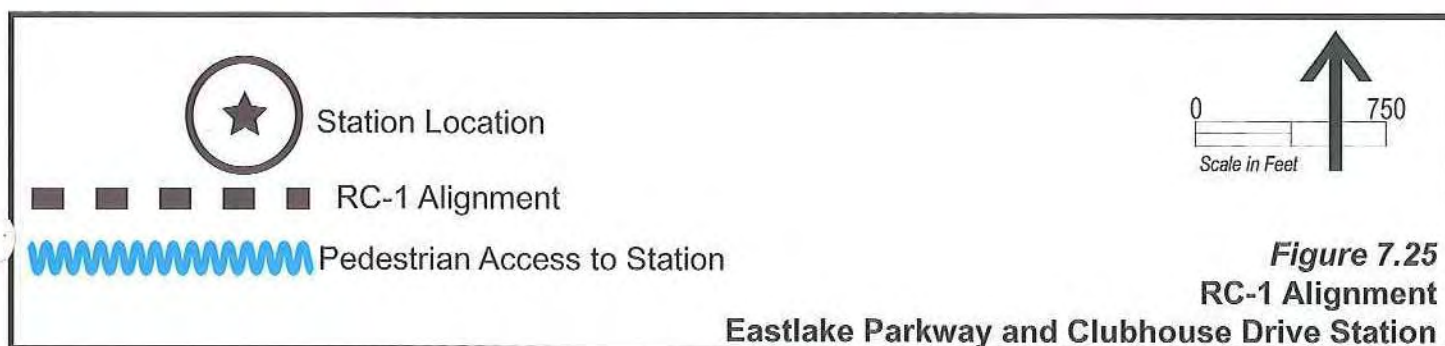
OPPORTUNITIES

### LAND USE LEGEND

- |                             |                               |
|-----------------------------|-------------------------------|
| Car Station                 | Office Lo-Rise                |
| Car Service                 | Senior High Schools           |
| 1/4 Mile Buffer             | Elementary Schools            |
| 1/2 Mile Buffer             | Other Recreation              |
| Single Family Residential   | Parks                         |
| Multi Family Residential    | Open Space Reserves/Preserves |
| Communications / Utilities  | Vacant / Undeveloped          |
| Golf Courses                | Undeveloped                   |
| Landscape Open Space        | Water Bodies                  |
| Retail and Strip Commercial | Freeways / Roads              |

**Figure 7.24**  
**RC-1 Alignment**  
**Eastlake Parkway and Clubhouse Drive Station**





### **M. Village Center North Station**

The Village Center North Station will be located north of Otay Lakes Road within Eastlake Parkway adjacent to t. The station is a mid-block pullout type station as illustrated in **Figure 7.26**. The southbound station will be located on the west side of Eastlake Parkway adjacent to the proposed commercial project station. The northbound alignment will travel on the northeast side of Eastlake Parkway. A transit priority signal is proposed at this station to allow the transit vehicles to merge into travel lanes and for pedestrians to cross at mid-block.

#### ▪ **Right-of-Way Requirements**

The station requirements are currently being implemented and are similar to those shown in **Figure 7.26**. No additional right-of-way is needed for the station to be used by the RC-1 alignment.

#### ▪ **Land Use Integration**

##### **Existing (1999)**

The Eastlake Parkway and Otay Lakes Road Station is currently being planned. The "existing" land uses will be similar to what is shown in the proposed land uses for 2020 and illustrated in **Figure 7.27**. The land uses within the station's ¼ and ½ mile radius include the following: commercial / strip retail, multi-family residential, single family residential, open space and a golf course. Located southwest of the station is a commercial retail space consisting of an actively used shopping center.

##### **Proposed (2020)**

Proposed land uses will intensify by adding commercial / retail space to the northwest corner. Proposed land use will also intensify with the building of a low-rise office development as illustrated in **Figure 7.27**. The majority of land uses to the northeast of the station will be industrial parks and low-rise office uses. To the southeast of the station, the primary land use will be residential, which will consist of multi-family and single-family residential units in 2020. To the west of the station commercial use continue to be the dominate land uses in 2020. The land uses southwest of the station will include offices, schools, and parks.

##### **Opportunities**

Currently, the mixture of commercial and residential uses identified in future the land use plan provides a strong transit supportive site for a station location. This station is ideally sited to serve a wide variety of users from the retail / commercial, low-rise office and residential uses. This station could benefit by the adding of multi-family residential uses to the development at or near the proposed station location.

#### ▪ **Access**

This station is well sited to be accessible to all of the surrounding uses. Pedestrian access will be vital to this station since only walk-up transit riders are expected. Strong links to the residential areas as well as offices in the area should be provided through existing and proposed sidewalks as illustrated in **Figure 7.28**. A pedestrian mid-block crossing is proposed at the station to allow for easy accesses to both stations platforms.

▪ **Village Center North Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- No significant engineering issues associated with this station are anticipated. This station has already been designed and is currently being implemented by the City of Chula Vista. No additional right-of-way is anticipated since most of the improvements will occur within the proposed right-of-way and the adjacent setbacks.
- Existing traffic signals with the mid-block transit priority signals will need to be coordinated.

***Environmental Issues***

- No significant environmental issues are anticipated.

***Community Issues***

- No significant community issues are anticipated.

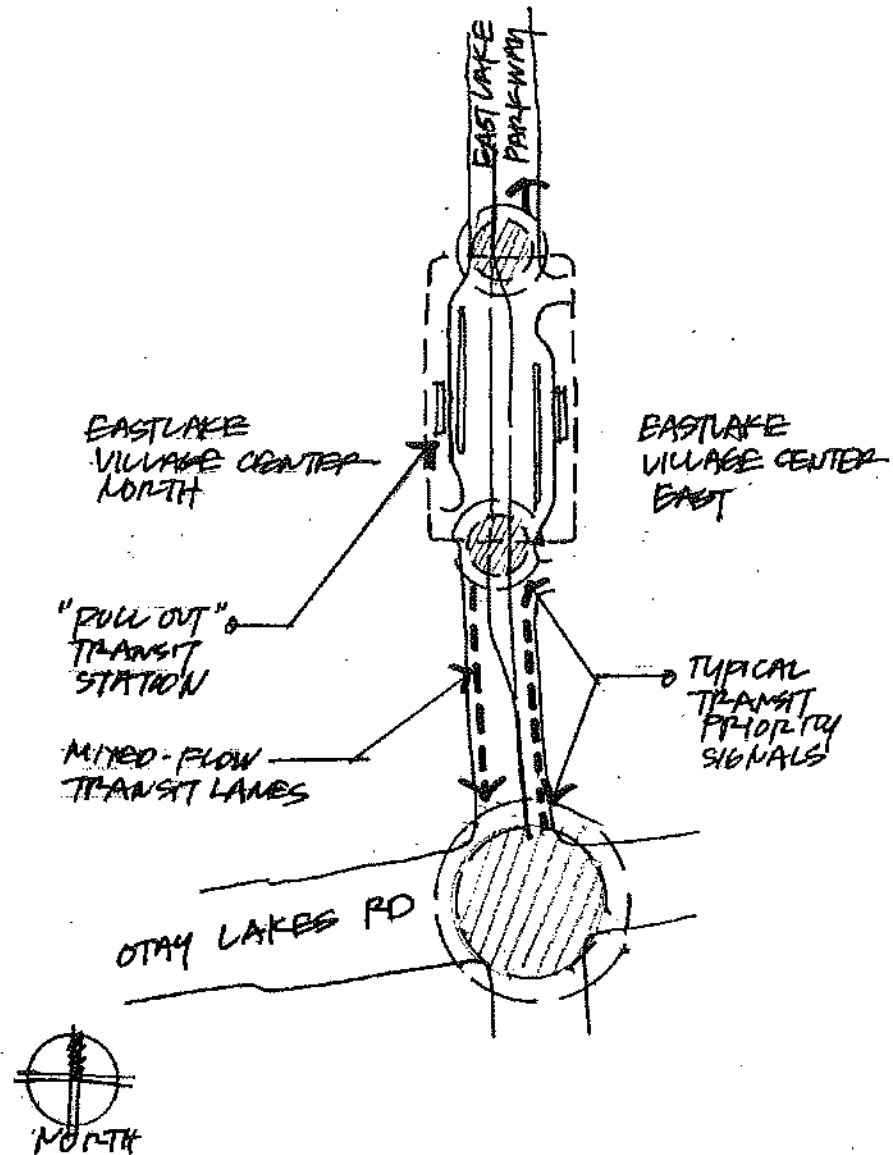


Figure 7.26  
Village Center North Station Location





EXISTING LAND USE

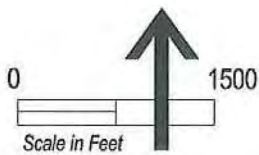


2020 PLANNED LAND USE

NOTE:  
No Opportunities Proposed At This Time



OPPORTUNITIES

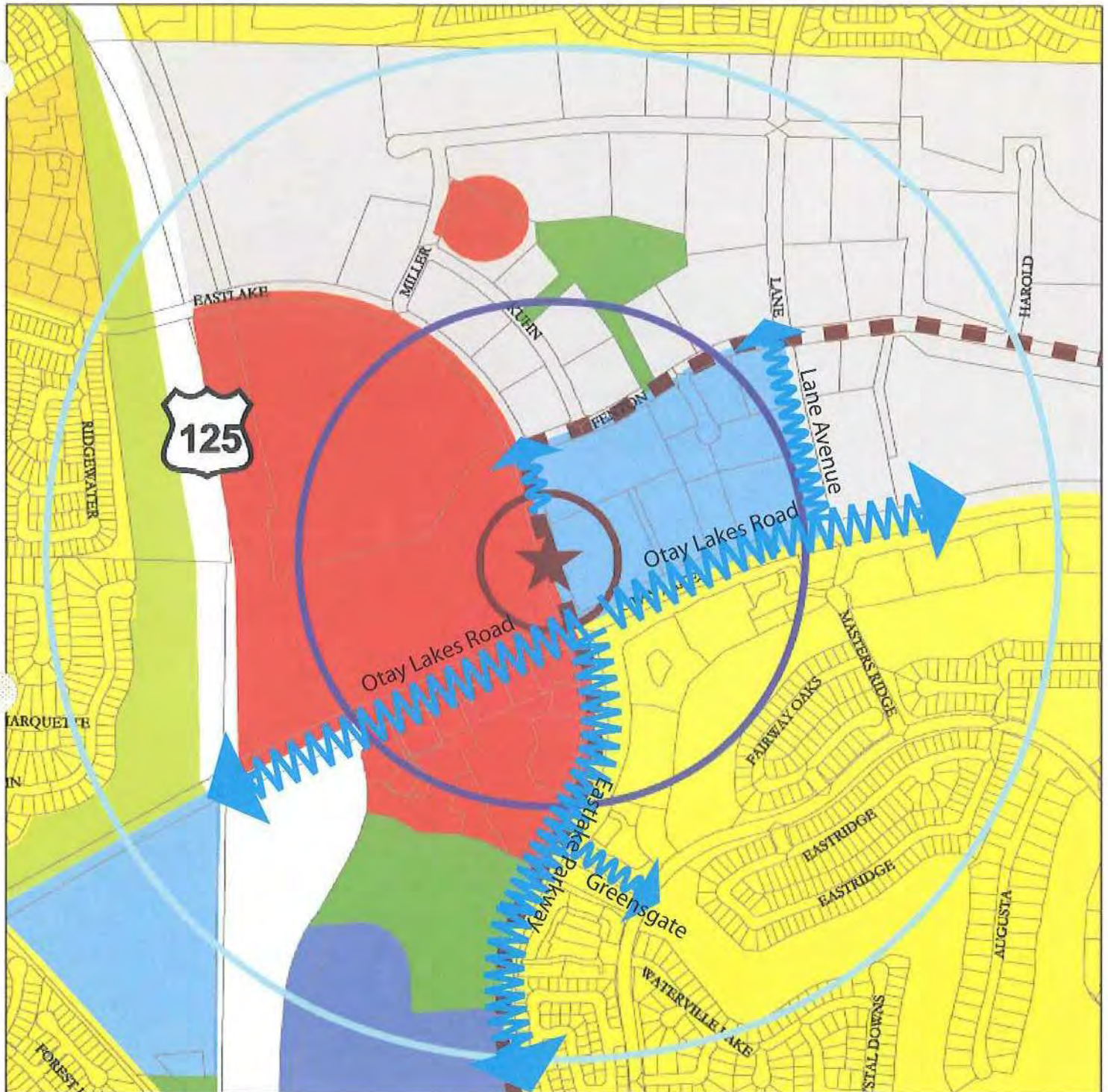


### LAND USE LEGEND

- |                             |                                      |                     |
|-----------------------------|--------------------------------------|---------------------|
| (★) Car Station             | Fire/Police Stations                 | Senior High School  |
| --- Car Service             | Water Bodies                         | Under Construction  |
| 1/4 Mile Buffer             | Parks                                | Hospitals - General |
| 1/2 Mile Buffer             | Open Space Reserves/Preserves        |                     |
| Single Family Residential   | Vacant / Undeveloped                 |                     |
| Multi Family Residential    | Undeveloped                          |                     |
| Industrial Parks            | Agriculture / Orchards and Vineyards |                     |
| Post Office                 | Landscape Open Space                 |                     |
| Communications / Utilities  | Golf Courses                         |                     |
| Retail and Strip Commercial | Office Lo-Rise                       |                     |

**Figure 7.27**  
**RC-1 Alignment**  
**Village Center North Station**





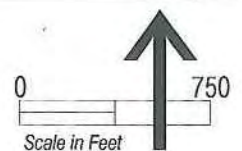
Station Location



RC-1 Alignment



Pedestrian Access to Station



**Figure 7.28**  
**RC-1 Alignment**  
**Village Center North Station**

## **N. Eastlake Business Park**

At Eastlake Business Park it is anticipated that there will be two curbside stations on Fenton Street. The Eastlake Business Park is expected to extend to the east and Fenton Street will be extended. The proposed station will be located within the new portion of the business park. The station could be located to the east of Harold Place. However, the specific location will be dependent on the development of the business park and the integration of the station into this significant activity center.

### ▪ **Right-of-Way Requirements**

The stations will be curbside similar to those shown in **Figures 1.6**. The right-of-way requirements will be 15-feet x 150-feet along Fenton Street for each station. This size of station accommodates a 15-foot boarding and alighting platforms and the length will serve multiple transit vehicles if necessary. No additional right-of-way is anticipated, as most of the improvements will occur within the proposed right-of-way of Fenton Street.

### ▪ **Land Use Integration**

#### **Existing (1999)**

The Eastlake Business Park is intended to be the terminus for the RC-1 Alignment. The business park is currently being planned for uses similar to what is shown in the proposed land uses for 2020. Significant office and industrial uses are currently being planned for the area adjacent to the proposed station site. Residential uses further east next to Hunte Parkway are also proposed as illustrated in **Figure 7.29**.

#### **Proposed (2020)**

See above.

#### **Opportunities**

The provision for a mixed-use component near this station will be more transit supportive than simply having the proposed industrial and office uses. A mix of land uses such as office, commercial, or multi-family residential next to Hunte Parkway should increase the potential for additional transit riders. Mixed-uses or even multi-uses at or near the station will create opportunities for higher pedestrian activity, increased transit ridership, and reduce the need for parking.

### ▪ **Access**

Primary pedestrian access will be provided along Fenton Street and the adjacent north / south streets. The station location should be well sited to take advantage of the proposed mix of land uses and will provide "front-door" access if possible. Direct access should also be provided to the residential area east of the station as illustrated in **Figure 7.30**. With final design the pedestrian environment should allow transit patrons to walk directly from the station to many of the proposed uses.

▪ **Eastlake Business Park Station Issues**

For the proposed station the following are possible issues affecting the implementation of station improvements.

***Engineering Issues***

- No significant engineering issues associated with this station are anticipated. The turn-around capability for transit vehicles will need to be addressed as the site is planned for development.

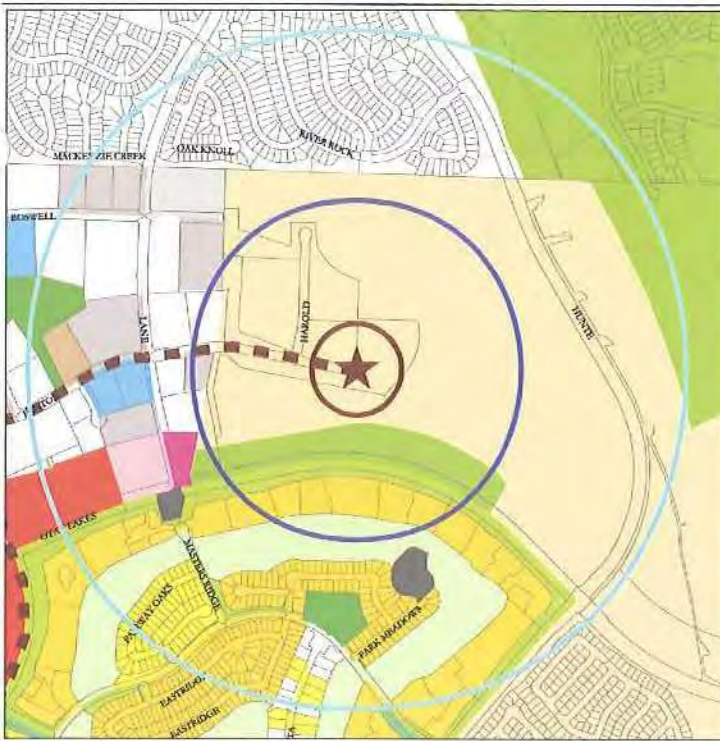
***Environmental Issues***

- No significant environmental issues are anticipated.

***Community Issues***

- No significant community issues are anticipated.





EXISTING LAND USE



2020 PLANNED LAND USE

Mixed Use Opportunities

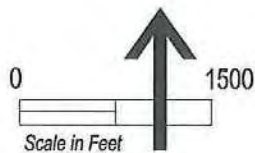
- Office (Primary)
- Commercial (Secondary)

Mixed Use Opportunities

- Residential (Primary)
- Commercial (Secondary)



OPPORTUNITIES

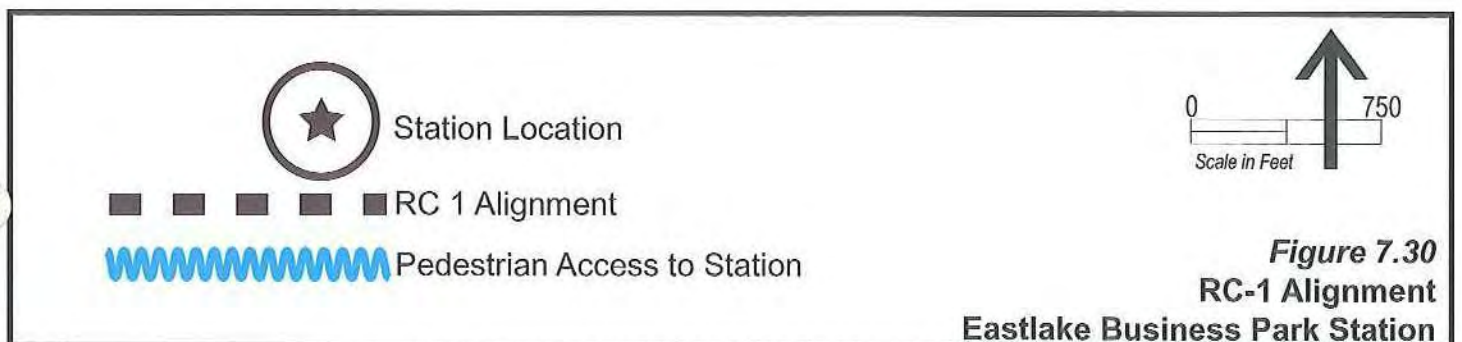
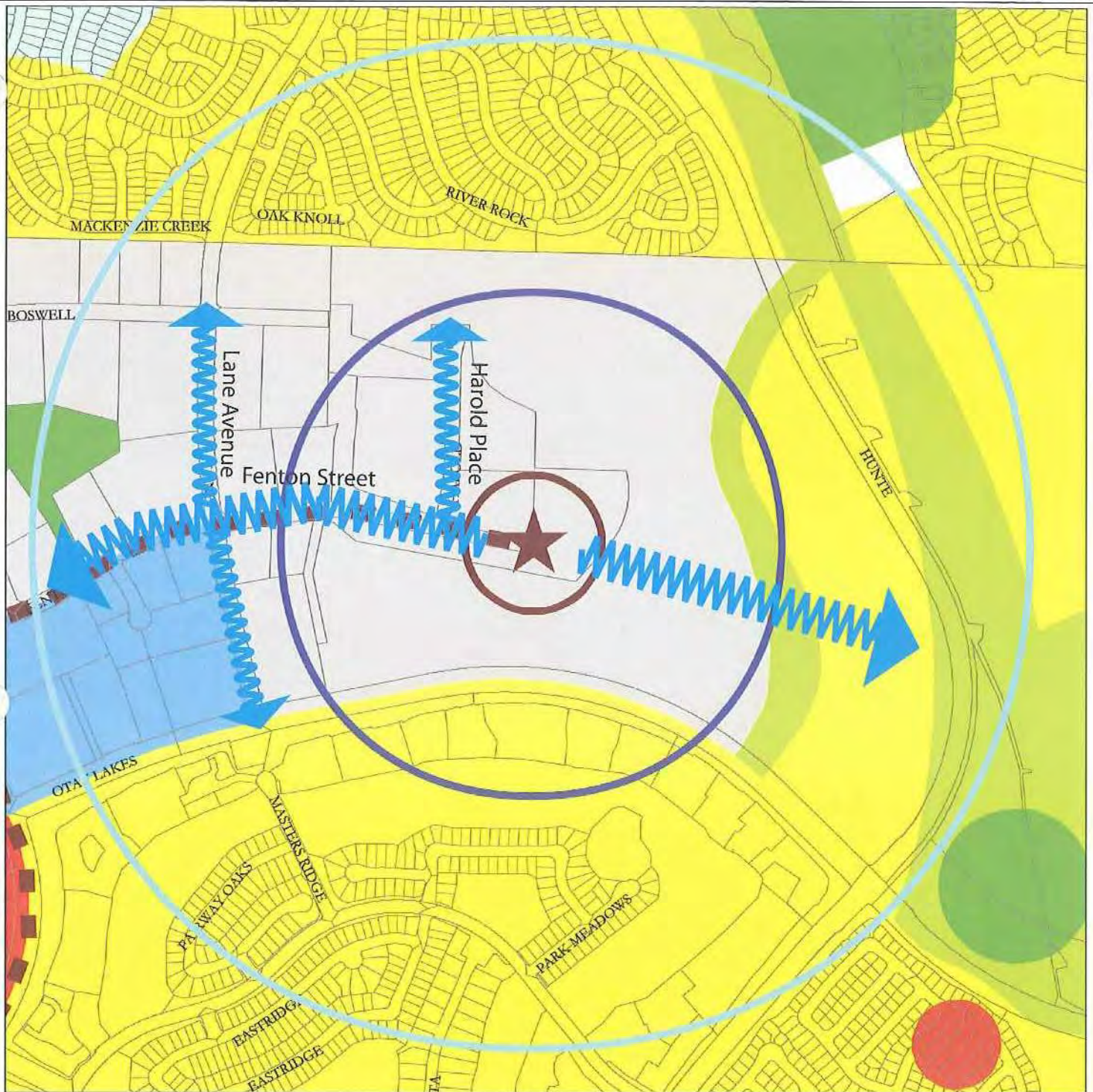


LAND USE LEGEND

- |                             |                                      |                    |
|-----------------------------|--------------------------------------|--------------------|
| Car Station                 | Fire/Police Stations                 | Elementary Schools |
| Car Service                 | Under Construction                   |                    |
| 1/4 Mile Buffer             | Parks                                |                    |
| 1/2 Mile Buffer             | Open Space Reserves/Preserves        |                    |
| Single Family Residential   | Vacant / Undeveloped                 |                    |
| Multi Family Residential    | Undeveloped                          |                    |
| Industrial Parks            | Agriculture / Orchards and Vineyards |                    |
| Hospitals - General         | Landscape Open Space                 |                    |
| Communications / Utilities  | Golf Courses                         |                    |
| Retail and Strip Commercial | Office Lo-Rise                       |                    |

**Figure 7.29**  
**RC-1 Alignment**  
**Eastlake Business Park Station**





**Appendix - A**

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**METROPOLITAN TRANSIT DEVELOPMENT BOARD'S GRADE CROSSING  
POLICIES**

## Policies and Procedures

No. 38

Subject:

Board Approval: 6/25/92

### GRADE SEPARATION FINANCING

#### PURPOSE:

The purpose of this policy is to establish uniform procedures for determining if a light rail transit (LRT) grade separation is needed and, if so, how it should be financed. Since MTDB has limited funding for LRT projects, care must be exercised in determining grade separations and cost sharing.

#### BACKGROUND:

In accordance with Board Policy No. 1, to be cost-effective, the San Diego LRT network needs to be developed primarily at-grade. However, due to the number of train movements and crossing traffic volume, there will be instances where a grade separation might be desirable, or necessary.

This policy sets forth procedures for the evaluation and funding of candidate grade separation locations.

#### PROCEDURES:

##### 38.1 Grade Separation Evaluation

38.1.1 Candidate grade separation locations can be requested by MTDB or the affected local agency. These locations might be on existing LRT lines or part of future extension projects. Requests for grade separations on future LRT extension projects must be received by MTDB prior to Certification of the project Environmental Impact Report. Requests received after that time shall be considered as existing locations.

38.1.2 To determine the need for a grade separation, MTDB will employ the services of a Registered Traffic Engineer (i.e., RTE in California), agreed to by both MTDB and the local agency's (City or County)

Traffic Engineer. The RTE will perform a traffic engineering analysis of the locations in question. For future lines, all potential at-grade locations will be subject to a traffic engineering analysis regardless of the need for grade separation.

38.1.3 a. For planning of future LRT extensions, the traffic engineering analysis performed by the RTE will determine the level of



service impact of LRT crossings upon existing and future year (i.e., 15- or 20-year time horizon) average daily traffic (ADT) volumes. The analysis should include the amount of queuing of vehicular traffic across the tracks as well as the queuing at adjacent intersections. In addition, the existing and future level of service, without LRT, will be evaluated. The purpose of this analysis will be to determine the level of service impact that LRT crossings would have on an at-grade location, and what mitigation measures may be available and necessary to maintain at least the existing or future (without LRT) level of service (if E or F), or to not worsen the level beyond D (if the existing or future, without LRT, is D or better).

- b. For the future year case, the RTE will also be required to address the quantitative impact on the level of service of LRT crossings as compared with future traffic growth, as well as queuing across the tracks and the queuing at adjacent intersections. The objective of this analysis would be to determine the relative causes of the future year delay.

### 38.2 Grade Separation Financing for Future LRT Extensions Projects

38.2.1 If the mitigation procedures identified in the analysis in cooperation with the local agency are not sufficient to keep the future level of service at the existing level or future, without LRT, (if E or F), or at D, or above (if the existing or future, without LRT, is D or better), then MTDB shall plan to construct a grade separation project at the location in question. MTDB will be responsible for 100 percent of the local share cost for the least expensive project.

38.2.2 If the mitigation procedures identified in the analysis in cooperation with the local agency are sufficient to keep the level of service at the existing level, or no worse than the projected future level, without LRT, then MTDB will not plan to construct a grade separation project at the location in question. However, if the affected local agency desires to have the location grade separated, then MTDB will plan to construct the least expensive grade separation project if the local agency will share with MTDB the local share cost for such a project based on the following formula:

| Future Level of Service with/without LRT | Local Agency Share | MTDB Share |
|------------------------------------------|--------------------|------------|
| A-B                                      | 100%               | 0%         |
| C-D                                      | 75%                | 25%        |
| E                                        | 50%                | 50%        |
| F                                        | 25%                | 75%        |

### 38.3 Grade Separation Financing for Existing Locations

- 38.3.1 If the assumptions in the original traffic engineering analysis and the certified EIR have not changed, and a local agency desires to have an existing LRT grade crossing separated, then MTDB will contribute up to ten percent of the final project cost of the least expensive grade separation.
- 38.3.2 If a local agency desires to have an existing LRT grade crossing separated and the assumptions in the original traffic engineering analysis and the certified EIR have changed, creating a level of service of E or worse, then the local agency and MTDB will consider sharing the cost of the grade separation in an amount agreed upon by both MTDB and the agency.
- 38.3.3 Depending upon respective budgets, the local agency and MTDB will endeavor to equally share the costs of an RTE to conduct an analysis of any candidate crossing.
- 38.3.4 For MTDB and the local agency to jointly sponsor an application for a grade separation grant, MTDB and the local agency will agree to equally share the costs of the least expensive project, or its local share if a state/federal grant is received.
- 38.3.5 If MTDB determines the need to have an existing LRT grade crossing separated, then MTDB will be responsible for 100 percent of the total project cost.

#### 38.4 State/Federal Grants

- 38.4.1 If a grade separation project is planned to be constructed, MTDB shall pursue state and/or federal funding to supplement the local share cost.

TFL:lm  
POLICY.38 - 6/25/92

This original policy was adopted on 1/25/90.  
This policy was revised on 6/25/92.

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—Level of service takes into account delay, geometrics, capacity, and peaking characteristics, and is to be in accordance with the Highway Capacity Manual, 1985, or as updated in the future.

***Appendix - B***

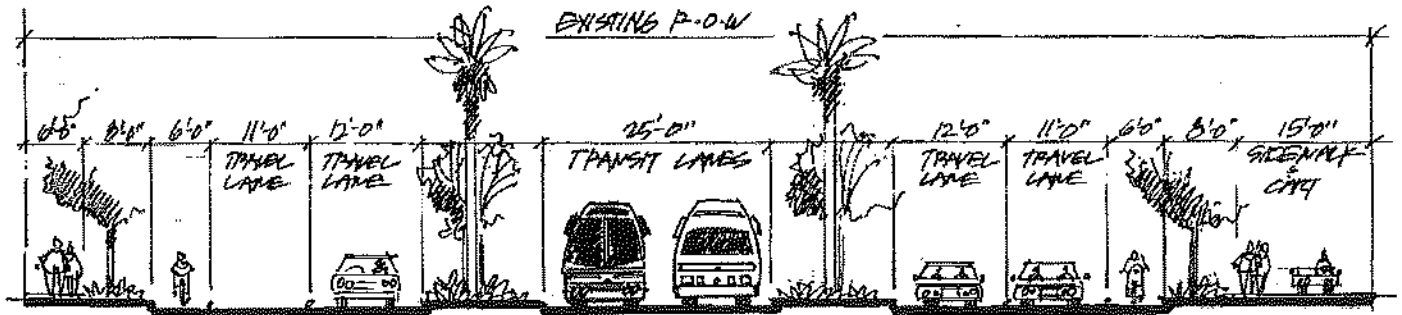
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**SOUTHBAY SHOWCASE PROJECT: CENTRAL CHULA VISTA - OTAY RANCH  
(RED CAR ROUTE 627)**

# South Bay Showcase Project

## **Central Chula Vista – Otay Ranch**



**Prepared for:**

**Metropolitan Transit Development Board**

1255 Imperial Avenue, Suite 1000  
San Diego, CA 92101

**Prepared by:**



ENGINEERS  
PLANNERS  
ECONOMISTS

**Wilbur Smith Associates**

9370 Sky Park Court, Suite 200  
San Diego, CA 92123

February 15, 2002



## **Central Chula Vista – Otay Ranch Showcase**

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### ***Study Area and Route Segments***

This section describes the project study area, existing bus routes, and the proposed Central Chula Vista-Otay Ranch "Showcase" route segments in the study area.

#### **Showcase Study Area**

As indicated in Section 1, the study area of this report includes the older communities of central Chula Vista that are between Interstate 5 and Interstate 805 and the newer and developing communities of Chula Vista that are east of Interstate 805. The Transit First Showcase study area has numerous destinations that could attract ridership to a Red Car service. These destination points include Chula Vista Center (a major retail center), Scripps Hospital, the downtown Chula Vista (Third Street), the YMCA and proposed library at Paeso Ranchero and East H Street, Southwestern College and the Otay Ranch Village One community center. The general land uses in the study area include single family, multi family residential housing, recreation, offices, and neighborhood and regional serving commercial uses.

#### **Existing Bus Routes**

The study area is currently served by bus routes 703, 704, 705, 706, 707, 709, and 711, which operate on various schedules ranging from 30-minute headways to 75-minute headways. Currently numerous bus stops associated with these routes are located on the Showcase route and shown in Figure 1. The bus routes serving this area are described below:

Route 703 operates between the H Trolley Station and the Palomar Street Trolley Station on 30-minute headways. The only stops within the study area are at the H Street Trolley Station and at H Street and Third Avenue.

Route 704 operates between the H Trolley Station and Southwestern College on 65-minute headways. The only stops within the study area are at the H Street Trolley Station, H Street and Fourth Avenue, and at Southwestern College. This route has weekday non-stop express service between the H Trolley Station and Southwestern College from early morning to mid-afternoon, which usually takes between 20- to 25-minutes from departure to arrival.

Route 705 operates between the Bayfront Trolley Station and Southwestern College on 30-minute headways. The only stops within the study area are at the H Street Trolley Station and at Southwestern College.

Route 706 operates on 20-minute headways, in a one-way clockwise loop, from the H Trolley Station to Fourth Avenue where it heads north and continues its loop around downtown Chula Vista before returning to the H Trolley Station. The only stops within the study area are at the H Street Trolley Station and at H Street and Fifth Avenue.

Route 707 operates between the H Trolley Station and the Sharp Chula Vista Medical Center on 60-minute headways. The only stops within the study area are at the H Street Trolley Station, H Street and Third Avenue, and at East H Street and Hidden Vista Drive.

Route 709 operates between the H Trolley Station and the Eastlake community on 20- to 30-minute headways. The only stops within the study area are at the H Street Trolley Station, H Street and Third Avenue, East H Street and Hidden Vista Drive, and at Southwestern College. This route has

weekday non-stop express service from the H Trolley Station to Southwestern College in the early morning hours, which usually takes about 20-minutes from departure to arrival.

Route 711 operates between Plaza Bonita and Southwestern College on 75-minute headways. The only stop within the study area is at Southwestern College.

A portion of the proposed Showcase route duplicates existing Route 704. Depending on headways of the proposed Red Car service, this duplication of service offers the potential to eliminate Route 704 once the Red Car service is implemented. If Route 704 were to stay in service it would benefit from the transit priority treatments developed for the Red Car service.

### **Proposed Showcase Stations & Route Segments**

The proposed Showcase route, shown in Figures 2 and 3, would operate as a Red Car service within the study area. The figures demonstrate the Showcase route, the transit priority measures, the activity area locations, and proposed station locations. The Red Car service is intended to emulate a fixed guideway rail system in terms of service quality, such as, reliability, speed, frequency, capacity and overall convenience. Exclusive transit lanes, transit medians, transit preferential treatments, or aerial guideways would be used as priority measures to bypass areas of street traffic congestion or to deal with topographic changes. However where practical, some portions of the route could operate within mixed use traffic lanes.

The general route was developed to provide direct access from the H Street Trolley Station to key activity centers in central Chula Vista on the H Street corridor and community serving uses east of Interstate 805 including Southwestern College and Otay Ranch Village Center 1.

A number of potential key activity areas were identified within the study area based on the previous studies. However, because the transit service is proposed to emulate a Red Car service and because the study area is also served by other bus routes operating as a Blue Car service, the number of proposed station was limited to eight. The eight stations would be near to or within the activity areas that offer the greatest potential for ridership. These possible station would include:

- H Street Trolley Station
- Chula Vista Center / Scripps Hospital
- South County Regional Center / Gateway Center
- Terra Nova Shopping Center
- YMCA / Proposed Library Site
- Southwestern College
- Intersection of Palomar Street and La Media Road (interim station)
- Otay Ranch Village 1 Town Center

The proposed Showcase route can be divided into five individual segments. Each of the five segments are further divided into sections that represent different conditions. The segments, associated sections, and the possible station locations are described in detail in the following.

## **Segment A: H Street - Interstate 5 to Interstate 805**

### ***A) General Segment Overview***

This portion of the segment would be from the H Street Trolley Station near Interstate 5 and would travel along H Street to Interstate 805. This corridor has a variety of land uses that consist of various retail commercial, regional serving commercial, employment centers, and residential development. The right of way width for H Street varies but primarily consist of 2 lanes in each direction with left turn lanes at signalized intersections. On-street parking is provided in certain blocks and in other blocks on-street parking is prohibited. In all cases on-street parking is prohibited at the intersections to allow for left turn pockets.

### ***B) H Street Section 1: H Street Trolley Station to Broadway***

This section of H Street has a 65 feet curb to curb dimension within a right-of-way of approximately 75 feet. This portion of H Street consist of two (2) 12.5 foot lanes in each direction, a continuous painted median of 15'. There is no on-street parking provided in this section. A 5 to 6-foot wide parkway consist of only a sidewalk that is contiguous with the curb. Numerous retail developments are located in the section of H Street along with multiple access points from H Street.

#### **1. Issues**

- Transition out of and into the H Street Trolley Station will need to be addressed. Additional bays will be required for the Red Car service. Reconfiguration of station to accommodate Red Car service may lose parking spaces.
- This section of the Showcase corridor is well covered by the existing Blue Car service.
- Narrow right-of-way may not allow for fully dedicated transit lanes without acquisition of additional right-of-way.
- Numerous commercial storefronts face the edge of the right-of-way. This does not allow for easy expansion of the corridor without the acquisition of property.
- Numerous driveways leading into the commercial parking areas may present potential challenges with future transit options.
- Multiple left turn options within each signalized block may present potential conflicts with future transit options.
- Current traffic volumes may permit mixed flow possibilities for transit service.
- Doing the "minimum" in order to accommodate the Red Car transit service may not be enough to gain the support of the local community.
- The City of Chula Vista is proposing landscape enhancements for the west end of H Street. These enhancements may expand into the existing travel lanes.
- Review the possibility of proposing a redevelopment zone for the entire H Street Corridor. Apply the Transit First principles to the adjacent land uses and make the transit corridor a significant feature of the redevelopment area.

## 2. Showcase Priority Measures

- A 12-foot wide single median bi-directional transit lane from the H Street Trolley Station to Broadway. This transit lane can be implemented within the existing curb to curb section (see Figures 4 and 5) with an additional width left over for wider lanes or parkway enhancements.
- Transit signal priority treatments at all of the intersections.
- A single transit lane will also occur at the signalized intersections (see Figure 6)
- Install ITS components on transit vehicles for avoidance with other transit vehicles.
- The median lane should have priority use by transit vehicle that is traveling in the direction of peak flow.
- Allow for transit vehicles in median to weave into travel lanes for passing of on-coming transit vehicles.
- Continue to restrict on-street parking.
- If feasible restrict left turn movements at signalized intersections only.

## 3. Station Location

- H Street Trolley Station would be the start /end point for the Red Car route. New bays for the Red Car service would have to be provided.
- The bays should be incorporated into the existing parking lot with a minimum of the existing parking being eliminated.
- Incorporation the Red Car service bay in close proximity to the existing Trolley platform should also be considered (see Figure 7). Transition to the H Street corridor would be provided by transit priority signals at Woodlawn Avenue.

### ***C) H Street Section 2: Broadway to Third Avenue***

This section of H Street has a 86-foot right-of-way. The right-of-way consists of two (2) 12 to 13 foot east bound travel lanes and a 13 foot and 19 foot west bound travel lanes, a continuous painted median of 15 feet and sidewalks of 8 and 5 feet. The curb to curb dimension is 71 feet.

There is on-street parking provided only on the north side of H Street. Parking is restricted on the south side and at the signalized intersection to allow for left turn pockets. The Chula Vista Center is located on the south side and Scripps Hospital is located on the north side of this section between Broadway and Fourth Avenue. The Gateway Center and the South County Regional Center are located at the intersection of Third Avenue and H Street.

## 1. Issues:

- The typical narrow right-of-way or curb to curb section could expand in the area of the Chula Vista Center.
- Numerous driveways leading into off-street parking areas.



- May be appropriate to provide a Red Car station in this area due to the number of activity centers located within a few blocks. The number of stations to serve this area would depend on the ridership numbers.
- The City of Chula Vista is proposing landscape enhancements for H Street. These enhancements include median improvements (specialty paving) and may also expand into the existing travel lanes.
- Establish where employees for activity centers are traveling from. This area may be served better by a blue car service if ridership is from the H Street Trolley Station rather than east of Interstate 805.
- Existing Blue Car stations serves the area and the existing activity centers.
- Eliminating on-street parking may not be supported by the commercial and retail community.
- Improvements to the area to serve a Red Car corridor will have to be viewed as a contribution to the area and not a detriment to gain local community support.

## 2. Showcase Priority Measures

- Due to the wider curb to curb section in this section provide a 24-foot wide dedicated transit median (see Figure 8). The transit median would be within a raised median.
- Restrict left turn movements to only signalized intersections.
- For dual lane transit median provide single lane crossing at signalized intersections (see Figure 9). This will also allow for left turn pockets at intersections.
- Install ITS components on transit vehicles for avoidance with other transit vehicles particularly at intersections.
- Eliminate general traffic left turn options, due to transit median, except at signalized intersections.
- Provide transit signal priority treatment at Fourth Avenue and Third Avenue.
- Transition into single land transit median at Broadway and at Third Avenue (see Figure 10).

## 3. Station Locations:

- Chula Vista Center and Scripps Hospital. A Red Car station could be located between Fifth and Fourth Avenue to serve both the Chula Vista Center and Scripps Hospital.
  - The Chula Vista Center and Scripps Hospital station would be within an expanded transit median and would require an expanded right-of-way for development (see Figure 11). An elevated station (see Figure) is possible but may be better for later implementation due to costs.
  - A median transit station will have to take into consideration pedestrian safety and accessibility. Locating the station near an existing signalized intersection may provide the best solution for both of these issues.

- Future redevelopment of Chula Vista Center should look at “meeting” the proposed Red Car station. This would provide new development opportunities to occur within the existing parking lot extending out to the future station.
- Gateway Center and South County Regional Center. A Red Car station could also occur at or near the intersection of Third Avenue and H Street to serve the Gateway Center and the South County Regional Center. Again, the station would be located within the dedicated transit median.
- A median transit station will have to take into consideration pedestrian safety and accessibility. Locating the station near an existing signalized intersection may provide the best solution for both of these issues.
- Analysis of ridership trends should be done to determine if the activity centers within this section could be served by either one of the proposed Red Car stations. Initially, it may be feasible to provide one station to serve all four of the activity centers. Placing the Red Car station mid-block of Third and Fourth Avenue may be sufficient for the entire section.
- If only one station is provided, pedestrian treatments and connections to each of the activity centers will be important. The connections to the activity centers should be pleasant walking experience and within five (5) minutes or less.

#### ***D) H Street Section 3: Third Avenue to Hilltop Drive***

This section of H Street has a 86-foot right-of-way that tapers down to an 80-foot right-of-way just beyond the Third Avenue intersection. The curb to curb dimension is 75-feet to 63-feet. The number of lanes is consistent with two lanes in each direction. However, no median is provided in this area and parking is permitted on both sides with a parkway of 8 to 10-feet. The adjacent land uses consist primarily of multi-family and single family residential. It was noted that the on-street parking is utilized more in the areas associated with the multi-family areas than the single family homes.

##### **1. Issues**

- Narrow right-of way for a portion of this section may not allow for fully dedicated transit lanes without acquisition of adjacent property.
- Numerous driveways leading into residential areas will be a challenge for the transit lanes.
- On-street parking is not heavily used in single family locations. On-street parking is used to a higher degree in the multi-family areas.
- Eliminating on-street parking may not be supported by the residential community in the multi-family areas.
- Multiple left turn options within each signalized block will present a challenge for future transit lanes.

##### **2. Showcase Priority Measures**

- A 12-foot wide single median bi-directional transit lane from the Third Avenue to Hilltop Drive. This transit lane can be implemented within the existing curb to curb section without requiring additional right-of-way (see Figure 12).

- Install ITS components on transit vehicles for avoidance with other transit vehicles.
- The median lane should have priority use by transit vehicle that is traveling in the direction of peak flow.
- Allow for transit vehicles in median to weave into travel lanes for passing of on-coming transit vehicles.
- Restrict on-street parking.
- If feasible restrict left turn movements at signalized intersections only.
- Provide transit signal priority treatment at Second Avenue, First Avenue, and Hilltop Drive

### 3. Station Locations

- There are no Red Car stations proposed for this section of H Street.

#### ***E) H Street Section 4: Hilltop Drive to Interstate 805***

This section of H Street leads directly to and from the interchanges for Interstate 805. The right-of-way for H Street starts at 82 feet just east of Hilltop Drive and narrows down to 76 feet as H street intersects with the interstate's interchange. There are two lanes in each direction with no on-street parking and a 6 to 7 foot wide sidewalks contiguous with the curb. The curb to curb dimension is approximately 65 feet. There is an additional west bound travel lane from the interstate that transitions into the other two west bound travel lanes. The primary land uses consist of single family residential homes and Hilltop High School located on the south west corner of H street and Interstate 805.

### 1. Issues

- Narrow right-of way may not allow fully dedicated transit lanes without acquisition of residential properties.
- Masonry walls of adjacent residential homes are located right at the edge of sidewalks. This occurs on both the north and south side of H Street.
- There are numerous driveways leading into single family garages on the south side of H Street prior to Carla Avenue.
- This section is a "pinch point" for the H Street corridor for future transit service.
- Traffic congestion associated with the interchange will have to be addressed as part of the Red Car service. This pinch point will require significant transit priority enhancements to allow transit to achieve the expected running time improvements.
- Transition for the transit lanes to the east side of Interstate 805 should begin at the east end of H Street prior to the interstate.

## 2. Showcase Priority Measures

- Provide for an expanded right of way to accommodate a single 12-foot wide bi-directional dedicated transit median lane. This may require acquisition of additional right of way near the interstate. Acquisition of additional right-of-way may be feasible on the south side of H Street where Hilltop High School is located (see Figure 13). This also could provide for the free turning movement for the southbound Interstate 805 lanes. Use of retaining or crib walls would be necessary.
- Install ITS components on transit vehicles for avoidance with other transit vehicles.
- The single median lane should have priority use by transit vehicle that is traveling in the direction of peak flow.
- Allow for transit vehicles in median to weave into travel lanes for passing of on-coming transit vehicles.
- Restrict on-street parking.
- Provide for transit priority signal at Interstate 805 to allow for transit vehicle to cross from dedicated median lane to mixed-flow lane east of the interstate.
- Eliminate general traffic left turn options except at signalized intersections.

## 3. Station Locations

- There are no Red Car stations proposed for this section of H Street.

### **Segment B: East H Street Interstate 805 to Southwestern College**

#### ***A) General Segment Overview***

This segment will address the Showcase area east of Interstate 805 on the East H Street corridor to Southwestern College. This area generally is comprised of recently developed communities that have been realized over the last 20 years. East H Street is considered a major arterial and has minimal access and few intersections. This is especially true when compared to H Street west of Interstate 805. This corridor has a variety of land uses but few activity centers that would generate a need for Red Car stations.

The land use consist of various retail commercial, regional serving commercial, a few employment centers, and residential development. Southwestern College is considered a primary activity center and is at the east end of the segment. The right-of-way width for East H Street varies but primarily consist of 3 lanes in each direction, provision for a class 2 bike lane, landscaped medians, varying parkway widths, no on street parking, and left turn lanes typically at the signalized intersections.

#### ***B) East H Street Section 1- Interstate 805 to Del Rey Boulevard***

This section of East H Street leads directly to and from the interchanges for Interstate 805 to the entrance of Rancho Del Rey community. The right-of-way is generally 110 feet and consist of three lanes in each direction, a 14-foot landscaped median, a 6-foot wide class 2 bike path on both sides, no on-street parking, and a 6-foot wide paths that are adjacent to the curb. The curb to curb dimension is approximately 98 feet. Signalized intersections occur at:



- Hidden Vista Drive (entry to Terra Nova Shopping Center)
- Terra Nova Drive
- Del Rey Boulevard

#### 1. Issues

- The City of Chula Vista has an agreement with the Terra Nova Shopping Center to provide a park and ride facility.
- Right-of-way would almost be wide enough to accommodate a median transit lanes of 24-feet. However it would require re-stripping of existing lanes and removal of the existing landscaped median.
- The width of East H Street in this area is not conducive for pedestrian crossing. This may create a problem for curbside station locations.
- Eliminating landscape medians may be strongly opposed by the community.
- Future station should take into consideration the Interstate 805 Yellow Car service that will have a station/stop at Interstate 805 and East H Street.
- Transit facility (Red Car route) must be presented as a benefit to the community. This benefit must be perceived as both a transportation benefit (by easing local congestion) and also as a aesthetic and visual benefit for the community.
- Future implementation of SR 125 may reduce traffic on East H Street.
- Environmental issues may arise if expansion of East H Street right-of-way encroaches into adjacent open space areas to accommodate a Red Car service. Future expansion should try not to occur on the north side of East H Street.
- Improvements by the City are proposed on the north side of East H Street. The improvements include the widening of East H Street for a new right turn lane to Hidden Vista Drive and a lane for direct access to the freeway.
- Few left/right turn conflicts occur along this section of East H Street.

#### 2. Showcase Priority Measures

- Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic(see Figure 14). Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
- Proposed widening of west bound East H Street from Hidden Vista Drive to Interstate 805 should improve the mixed-flow concept for transit. The pinch point is still the bridge over Interstate 805.

- Provide transit signal priority treatment at the signalized intersection of Hidden Vista Drive, Terra Nova Drive and Del Rey Boulevard.
- Que-jumping lanes for this section or segment are not proposed at this time. Providing transit priority treatment at signalized intersection would allow for the free movement of transit without the need for que-jumping lanes. Transit priority treatment would allow the transit vehicles to control the signal and keep the flow of traffic moving so that it could cross the intersection prior to the light turning red. At this time que lanes would only add to the overall project cost by requiring additional right-of-way at intersections.

### 3. Station Location

- A Red Car station could occur at the Terra Nova Shopping Center. Location and design of the station would be curbside on both the north and south side of East H street. Stations would require expanding the existing right-of-way at these locations.
- The Terra Nova location would be considered a major transfer station due to the future Red Car and yellow car service associated Interstate 805.
- If feasible the pedestrian crossings at the stations should try to minimize the distance when crossing East H Street.
- A park and ride facility should be developed within the Terra Nova Shopping Center as part of the south side transit station.

### **C) East H Street Section 2 – Del Rey Boulevard to Paseo Ranchero**

This section of East H Street has a right-of-way width that is generally 110 feet and consist of three lanes in each direction, a 14-foot landscaped median, a 6-foot wide class 2 bike path on both sides, no on-street parking, and a 6-foot wide paths that are adjacent to the curb. Curb to curb dimension is approximately 98 feet. Signalized intersections occur at:

- Paseo del Rey
- Paseo Ranchero

### 1. Issues

- Right-of-way is almost wide enough to accommodate a median transit lanes of 24-feet. However it would require re-stripping of existing lanes and removal of the existing landscaped median.
- Eliminating landscape medians may be strongly opposed by the community.
- Transit facility (Red Car route) must be presented as a benefit to the community. This benefit must be perceived as both a transportation benefit (by easing local congestion) and also as a aesthetic and visual benefit for the community.
- Future implementation of SR 125 may reduce traffic on East H Street.
- Environmental issues may arise if expansion of East H Street right-of-way is expanded into adjacent open space areas to accommodate a Red Car corridor.

- Few left turn conflicts occur along this section of East H Street.
2. Showcase Priority Measures
    - Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic (see Figure 14). Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
    - Provide signal priority treatment at the signalized intersection of Paseo del Rey and Paseo Ranchero.
  3. Station Location
    - East H Street and Paseo Ranchero. There would be two curbside stations at this location. One serving west bound transit lane and one serving east bound transit lanes. The stations would be curbside and located on the far-side of the intersection for west bound (see Figure 15) and near-side for east bound. The near-side east bound station would also serve transit vehicles that would be turning right onto Paseo Ranchero.
    - If feasible the pedestrian crossings at the stations should try to minimize the distance when crossing East H Street.

***D) East H Street Section 3 – Paseo Ranchero to Southwestern College Entry***

This section of East H Street has a right-of-way width that is generally 111-feet and consist of three lanes in each direction, a 9-foot raised landscaped median, no on-street parking, and a 8-foot wide sidewalk on the north side adjacent to the curb and 13-foot wide sidewalk/parkway on the south side. The curb to curb dimension is approximately 83-feet. Signalized intersections occur at:

- Buena Vista Way
- Intersection at Southwestern College entry and Bonita Point Plaza.

**1. Issues**

- Right-of-way would not be wide enough to accommodate a median transit lanes of 24-feet within the existing 83-feet curb to curb section on East H Street. The addition of the transit lanes would require the removal of the existing landscaped median.
- Transition into and out of Southwestern College will need to be carefully designed.
- Eliminating landscape medians may be strongly opposed by the community.
- Transit facility (Red Car route) must be presented as a benefit to the community and the college. This benefit must be perceived as both a transportation benefit (by easing local congestion) and also as a aesthetic and visual benefit for the community and college.
- Future implementation of SR 125 may reduce traffic on East H Street.
- Few left turn conflicts occur along this section of East H Street.

## 2. Showcase Priority Measures

- Allow for the mixed-flow transit lanes within East H Street that would allow Red Car service to use any lanes depending on traffic (see Figure 14). Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
- Provide signal priority treatment at the signalized intersection of Buena Vista Way and the entry road to Southwestern College and Bonita Point Plaza from East H Street.

## 3. Station Location

- There are no Red Car stations proposed for this section of H Street.

### **Segment C: Otay Lakes Road – Southwestern College to Palomar Street**

This segment addresses the Showcase area from Southwestern College south to Palomar Street in Otay Ranch. The land use consist of various retail commercial and residential development. The name for the street, Otay Lakes Road, changes past Telegraph Canyon Road to become La Media Road.

#### ***A) General Segment Overview***

The right of way for Otay Lakes Road varies but provides two (2) lanes in each direction a continuous painted median of 12-feet, provision for a class 2 bike lane, and no on street parking within a 67-foot to 72-foot curb to curb section. Sidewalks within the parkway is provided on the west side only and the east side has a pathway. Currently plans are being prepared to improve Otay Lakes Road to a six-lane roadway similar to La Media Road.

#### ***B) Otay Lakes Road Section 1- Southwestern College to Telegraph Canyon Road***

##### 1. Issues

- Station for Red Car service should have direct pedestrian access to the college's "front door."
- Determine if a Transit Plaza is feasible behind the proposed retail center. This would require eliminating a section of the campus loop road in this area.
- Analysis of the college's access, parking and circulation issues will need to be prepared in concert with any proposal for a Transit Plaza. Transit facilities must work in conjunction with the college's operation.
- New Red Car service station should be in close proximity to the existing bus transfer station at Southwestern College.
- Transit facility (Red Car route) must be presented as a benefit to the community and the college. This benefit must be perceived as both a transportation benefit (by easing local congestion) and also as a aesthetic and visual benefit for the community and college.
- The location and design of the transit lanes through the college must be sensitive to the landscaped open space area facing Otay Lakes Road.



- Current traffic volumes may be low enough to allow for mixed flow transit lanes in both Otay Lakes and La Media Road.
  - Determine if one way reversible loop would work in this area.
  - Future traffic volumes need to be considered when determining final Red Car options.
  - The completion of SR 125 may reduce the overall future traffic volume on Otay Lakes Road.
  - Future improvements for Otay Lakes Road to a six lane arterial could consider the requirements for a Red Car service lane(s).
  - Transition of Red Car lanes into and from Southwestern College to Otay Lakes Road will have to be carefully designed.
2. **Showcase Priority Measures**
- 24-foot wide dual transit lanes from the east side of the Southwestern College at Otay Lakes Road leading to East H Street(see Figure 16).
  - Due to elevation differences between East H Street and Southwestern College an elevated guideway from East H Street that would be needed to provide access to Southwestern College proposed station (see Figure 17).
  - Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic. Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
  - Provide transit priority signals at Gotham Street and Telegraph Canyon Road.
3. **Station Locations**
- Southwestern College. A Red Car station should occur at the Southwestern College. This is a major activity center and destination with high ridership possibilities. The station would be located in close proximity to the college's pedestrian corridors (see Figure 18) and also to the existing transit transfer stations. Also, strong consideration should be giving to creating a transit/pedestrian plaza. The plaza would occur in the area where the transit lanes lead south from East H Street to the proposed transit station.
    - The design and location of the station should allow for direct pedestrian access to the college (see Figure 18).
    - Location of the station should also be in close proximity to the transits transfer station currently located at the college.

### ***C) La Media Road Section 2 – Telegraph Canyon Road to Palomar Street***

This section of La Media Road has a right-of-way of approximately 135-feet and consist of three (3) lanes in each direction, a 15-foot landscaped median, an 8-foot wide class 2 bike path on both sides, no on-street parking and a 16-foot wide parkway with a 5-foot wide decomposed pathways. The curb to curb dimension is approximately 103-feet. Signalized intersections occur at both Telegraph Canyon Road and Palomar Street.

### 1. Issues

- Current traffic volumes may be low enough to allow for mixed flow transit lanes.
- Determine if one way reversible loop would also work in this area.
- Future traffic volumes need to be considered when determining final Red Car options.
- Future implementation of Red Car service will have to duplicate the enhanced landscaped parkways and medians.
- The transition of Red Car lanes from La Media Road to Palomar Street median transit lanes will have to be carefully designed.

### 2. Showcase Priority Measures

- Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic. Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
- Provide transit priority signals at Palomar Street.

### 3. Station Location

- La Media Road and Palomar Street. Two curbside stations should be located at the intersection of La Media Road and Palomar Street. This would be a temporary station until future Red Car and Yellow Car service is implemented.
  - One station would serve north bound transit vehicles and should be located on the north-east side of the intersection of La Media Road and Palomar Street. The other station serving the south bound transit vehicles should be located on the north-west side of the intersection.
  - A park and ride lot should be located in this area to serve this station in the near term.

## **Segment D: Palomar Street – La Media Road to Heritage Road**

### ***A) Palomar Street Section 1- La Media Road to Heritage Road***

Palomar Street has a right-of-way of 132 to 165-feet and consist of two lanes in each direction, a 37 to 49-foot landscaped median, a class 2 bike path 6-feet on both sides, no on-street parking and a 6-foot wide decomposed pathways separate from the curb. Signalized intersections occur at both La Media Road and Heritage Road.

### 1. Issues

- Is a “park and ride” needed for the Village One transit station? Nearby park may be a possibility to provide necessary parking for the station.
- Transition of Red Car lanes from La Media Road and Heritage Road to Palomar Street will have to be carefully designed.

## 2. Showcase Priority Measures

- A 24-foot wide dedicated transit lane is provided within a 49-foot landscaped median on Palomar Street from La Media Road to Heritage Road (see Figure 19).
- Provide transit priority signals at La Media Road and Heritage Road.

## 3. Station Locations

- A Red Car station is proposed at the Otay Ranch Village One Town Center. The station would be a dual lane median station with single platform in the middle.

### **Segment E: Heritage Road and Paseo Ranchero – Palomar Street to East H Street**

#### ***A) General Overview of Segment***

This section will address the Showcase area as the transit lanes travel north on Heritage Road and Paseo Ranchero to East H Street. The right-of-way changes to allow six travel lanes from Palomar Street to Telegraph Canyon Road to four (4) travel lanes from Telegraph Canyon Road to East H Street. This area generally is comprised of recently developed residential communities with few activity centers that would generate a need for a Red Car station.

This segment is also considered a temporary section for Red Car service. This segment is only needed to loop the transit service back up to East H Street. When future Red Car and Yellow Car service is completed in the area this section would be eliminated.

#### ***B) Heritage Road Section 1- Palomar Street to Telegraph Canyon Road***

This section of Heritage Road has an 128 to 145-foot right-of-way that consist of three travel lanes in each direction, 4 to 16-foot landscaped median, no on-street parking on either side, and a 8-foot wide class 2 bike lane. The parkway is variable and has a meandering 20-foot wide pathway of decomposed granite and is part of a regional trail.

## 1. Issues

- Current traffic volumes may be low enough to allow for mixed flow transit lanes.
- Determine if one way reversible loop would work in this area.
- Future traffic volumes need to be considered when determining Red Car options.
- This section of the Red Car route may only be an interim solution until full Red Car service in the area is realized.
- Transition of Red Car lanes from Palomar Street to Heritage Road will have to be carefully designed.
- Future implementation of Red Car service will have to duplicate the enhanced landscaped parkway and medians.

## 2. Showcase Priority Measures

- Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic. Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
- Provide transit priority signals at Palomar Street and Telegraph Canyon Road.

## 3. Station Locations

- A Red Car station would not be located in this section.

### ***B) Paseo Ranchero Section 2 – Telegraph Canyon Road to East H Street***

This section of Heritage Road has a 94-foot right-of-way that consist of two travel lanes in each direction, 10-foot landscaped or painted median, no on-street parking on either side, and a 6-foot wide class 2 bike lane. The 10-foot wide parkway has 5-foot sidewalks that are contiguous with the curb.

## 1. Issues

- Current traffic volumes may be low enough to allow for mixed flow transit lanes.
- Determine if one way reversible loop would work in this area.
- Future traffic volumes need to be considered when determining Red Car options.
- This section of the Red Car route may only be an interim solution until full Red Car service in the area is realized.
- Transition of Red Car lanes from East H Street to Heritage Road will have to be carefully designed.

## 2. Showcase Priority Measures

- Provide for the mixed-flow transit lanes that would allow Red Car service to use any lanes depending on traffic. Transit vehicles utilizing travel lanes located away from curbside would not have to slow-down for other vehicles turning right into or out of adjacent properties.
- Provide transit priority signals at Telegraph Canyon Road, East J Street and East H Street.

## 3. Station Locations

- A Red Car station would be located at East H Street at Heritage Road.

### **General Project Conclusions**

It is anticipated that all of the Showcase Priority Measures proposed in this report should be feasible to implement within a 3 to 5 year time frame. There appears to be no major environmental issues that could potentially cause a delay. This is particularly true in the H Street corridor east of Interstate 805 now that mixed-flow lanes for transit purposes are being proposed. This corridor will not have to

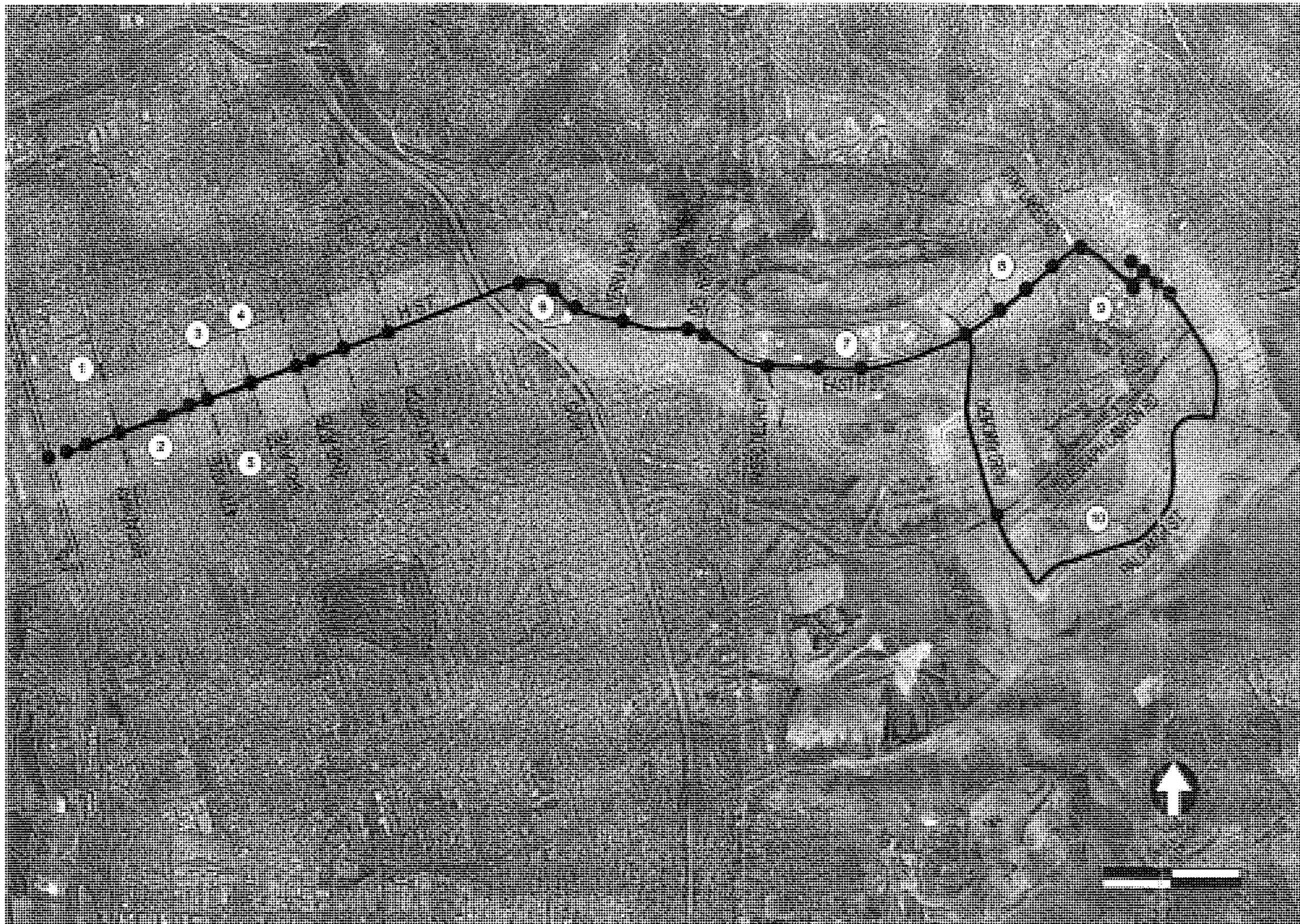


expand the right-of-way for the mixed-flow transit lanes thereby eliminating any encroachments and potential impacts to the natural open space areas.

Traffic issues or impact , related to "mixed-flow" lanes, will still have to be determined. However, it is anticipated that the proposed transit service may improve the overall traffic. This could occur if transit ridership increases and vehicle trips are reduced within the corridor.

The traffic issue that may be the biggest hurdle (community acceptance and potential traffic impacts) is eliminating or restricting left and or right turn movements within the H Street segment. The area of particular concern is from the H Street Trolley Station to Third Avenue. The business community may not see a benefit of having these turn movements eliminated in order to provide for a transit system. It should also be noted that the H Street segment does have an enhancement program being proposed including improvements to the median. As such, there may be some resistance to the Showcase Project if it is seen as keeping these improvements from occurring.

Acquisition of additional right-of-way for any of the Showcase improvements could prove difficult. Whether it is with private property owners along the H Street corridor or with the school district for a portion of Hilltop High School negotiations could end up being time consuming.



# Existing Bus Stops

MTDB – South Bay  
Showcase Project

Central Chula Vista –  
Otay Ranch

## Legend

### Activity Centers

- ① H-St. Trolley Station
- ② Chula Vista Center
- ③ Scripps Hospital
- ④ Gateway Center
- ⑤ South County Federal Center
- ⑥ Terra Nova Plaza
- ⑦ Rancho Del Rey Center
- ⑧ YMCA
- ⑨ Southwestern College
- ⑩ Otay Ranch Village I Town Center

- Showcase Alignment
- Existing Blue Line Bus Stops



Wilbur Smith Associates

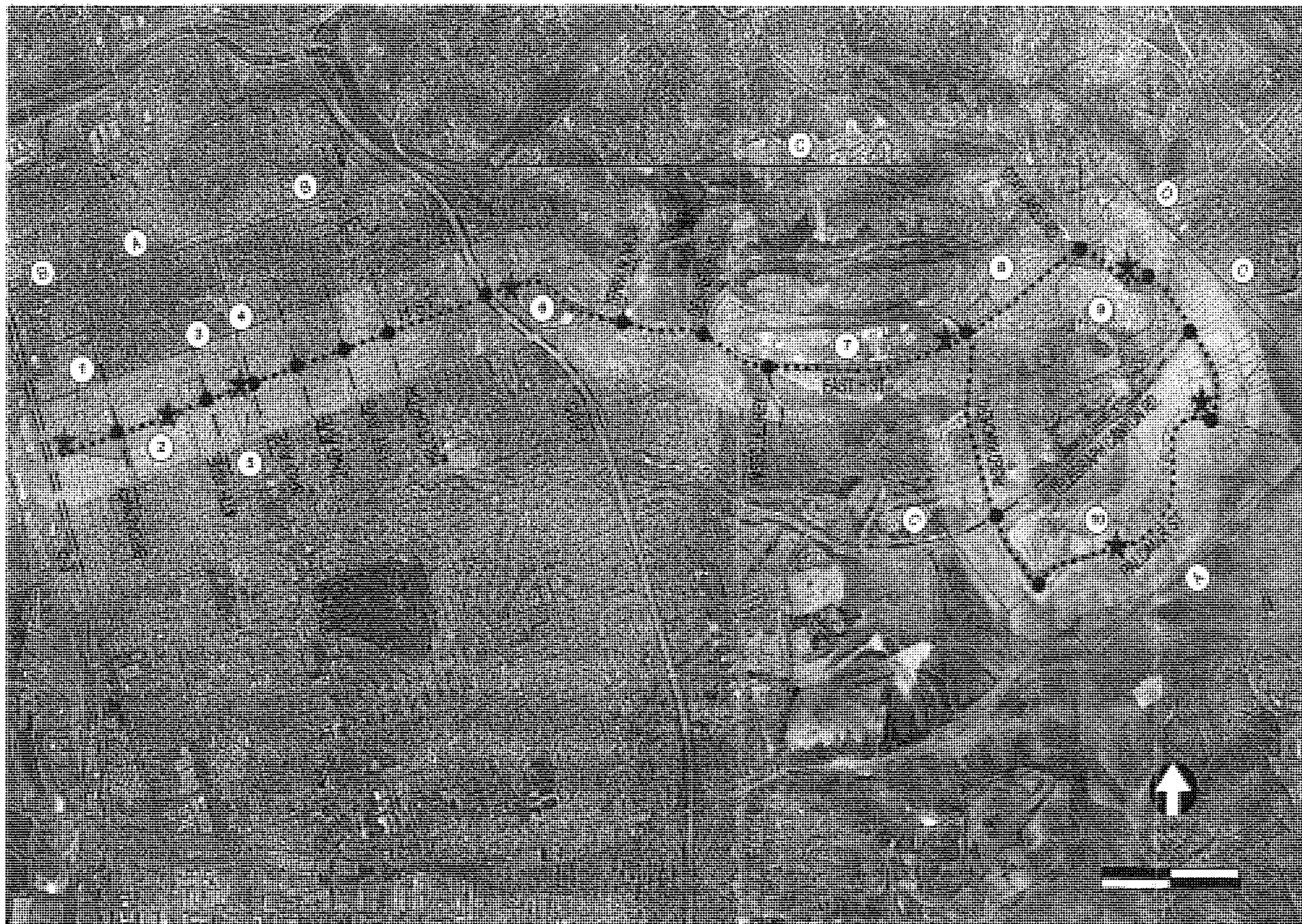
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02/14/02

Figure 1







## Preliminary Concepts

*MTDB - South Bay  
Showcase Project*

*Central Chula Vista -  
Otay Ranch*

### Legend

#### Activity Centers

- ① H-St. Trolley Station
- ② Chula Vista Center
- ③ Scripps Hospital
- ④ Gateway Center
- ⑤ South County Regional Center
- ⑥ Terra Nova Plaza
- ⑦ Rancho Del Rey Center
- ⑧ YMCA
- ⑨ Southwestern College
- ⑩ Otay Ranch Village I Town Center

#### Transit Lane Types

- A ■■■■ Dual Lane Median
- B ■■■■ Single Lane Median
- C ■■■■ Mixed-Flow
- D ■■■■ Dedicated Dual Lane
- ▨ Transition Areas
- ★ Red Car Transit Station
- Transit Priority Signal



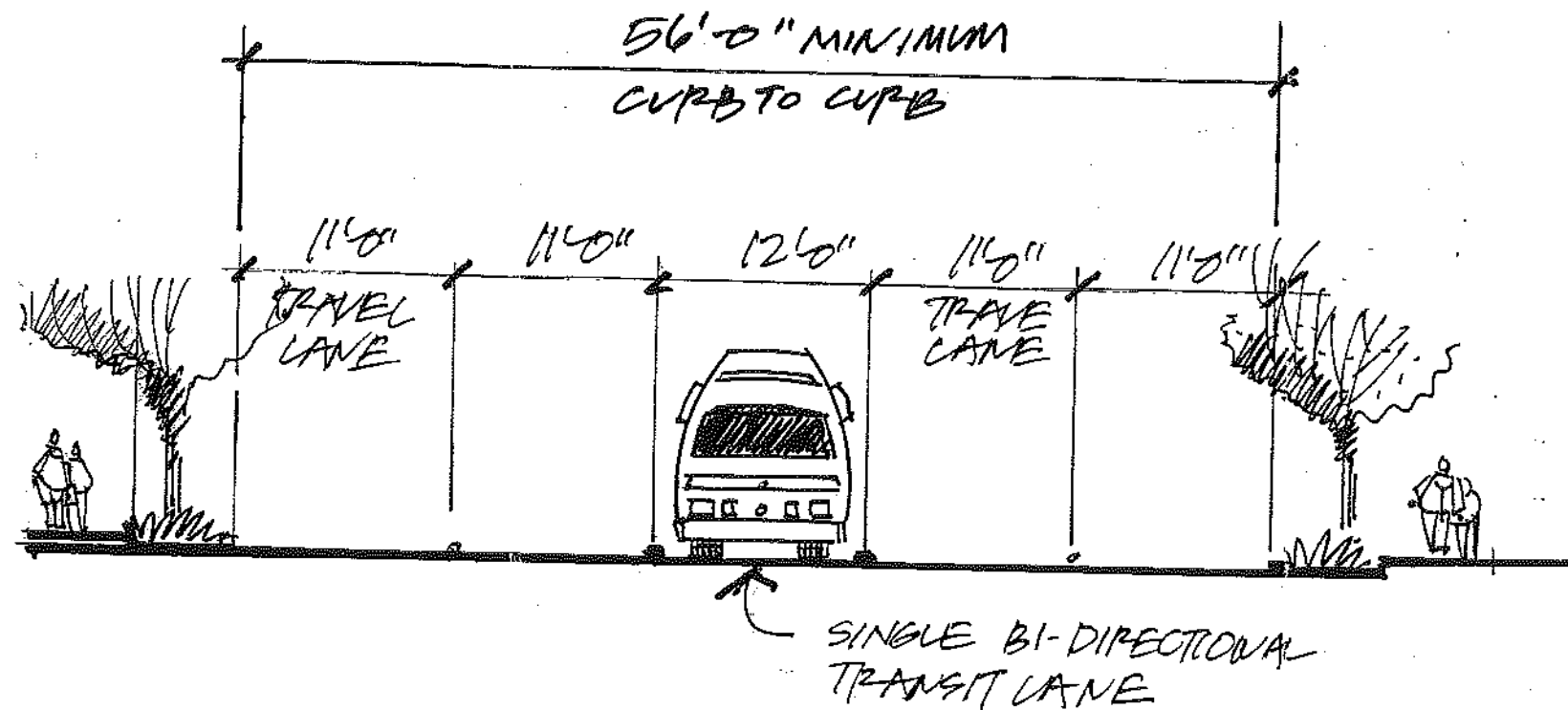
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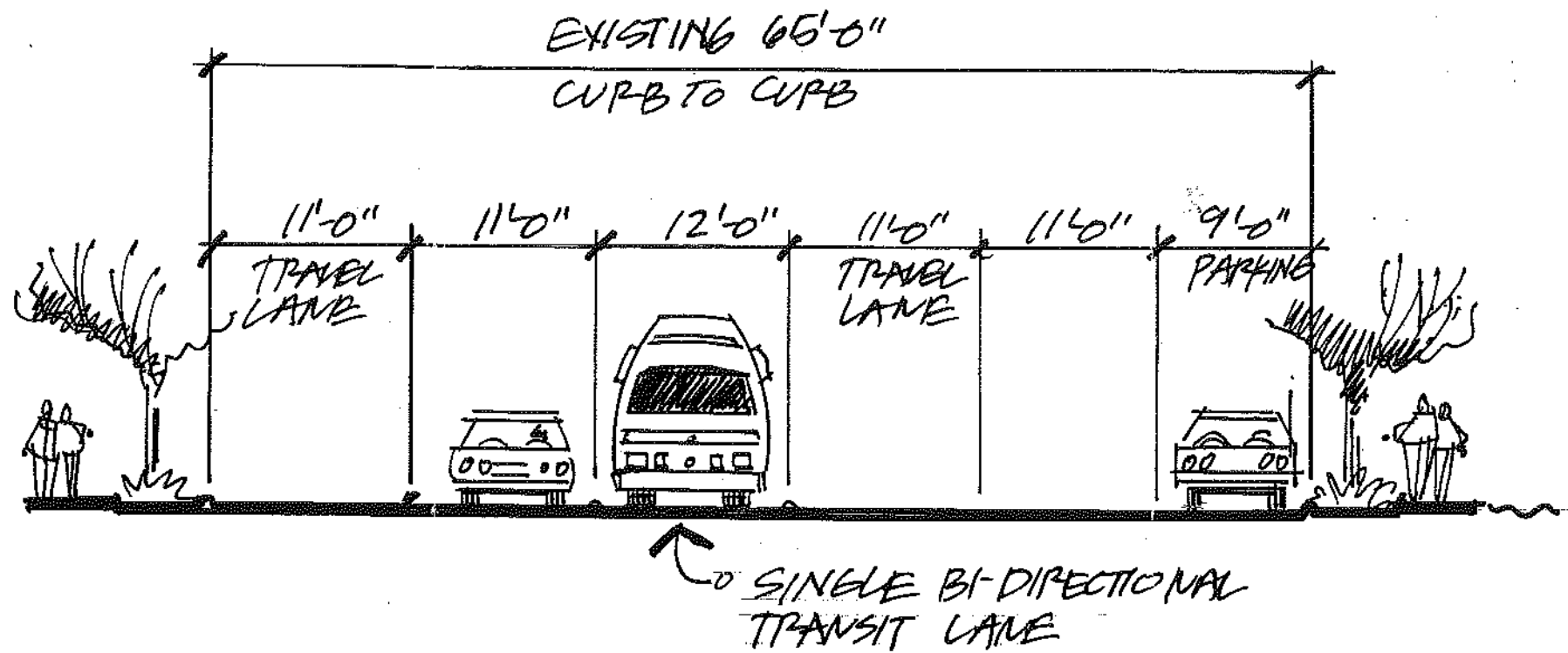
**Figure 3**





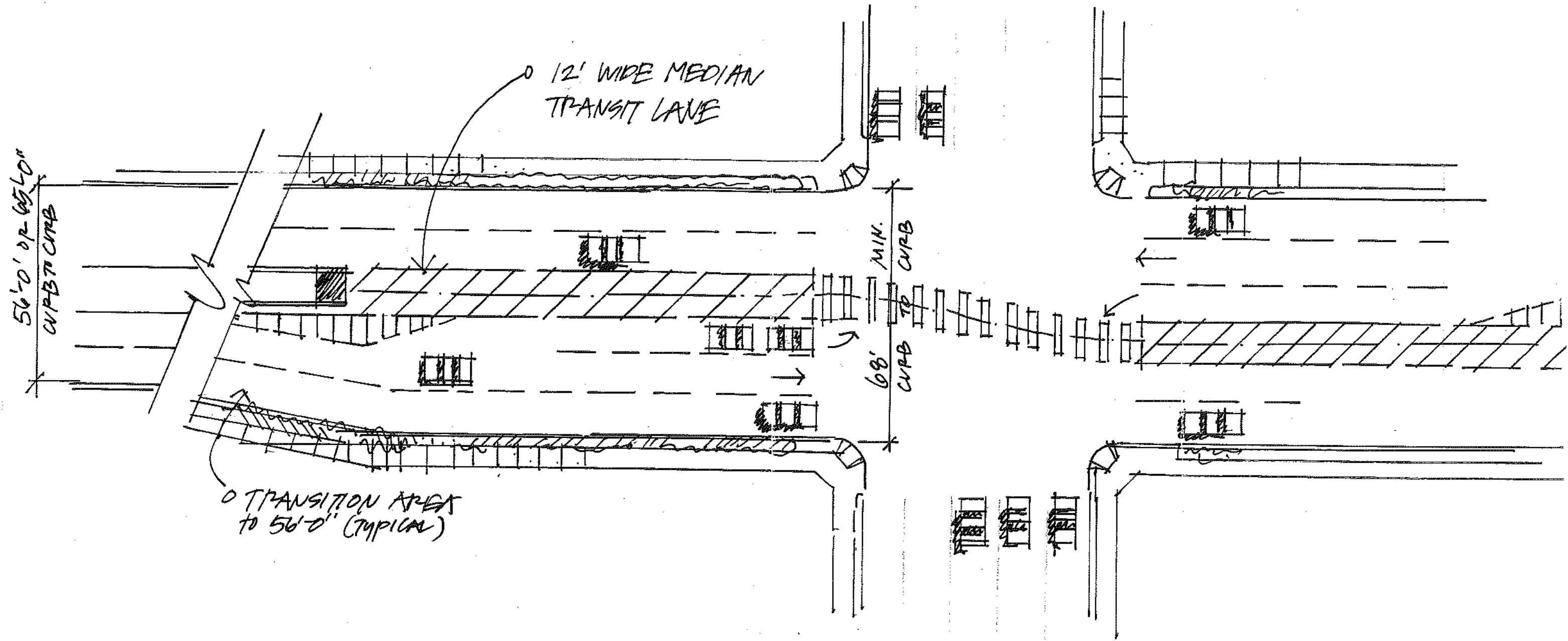
**MTDB Transit First Showcase**  
**H Street Section 1: H Street Trolley Station to Broadway**  
 Red Car Service Options

**Figure 4**



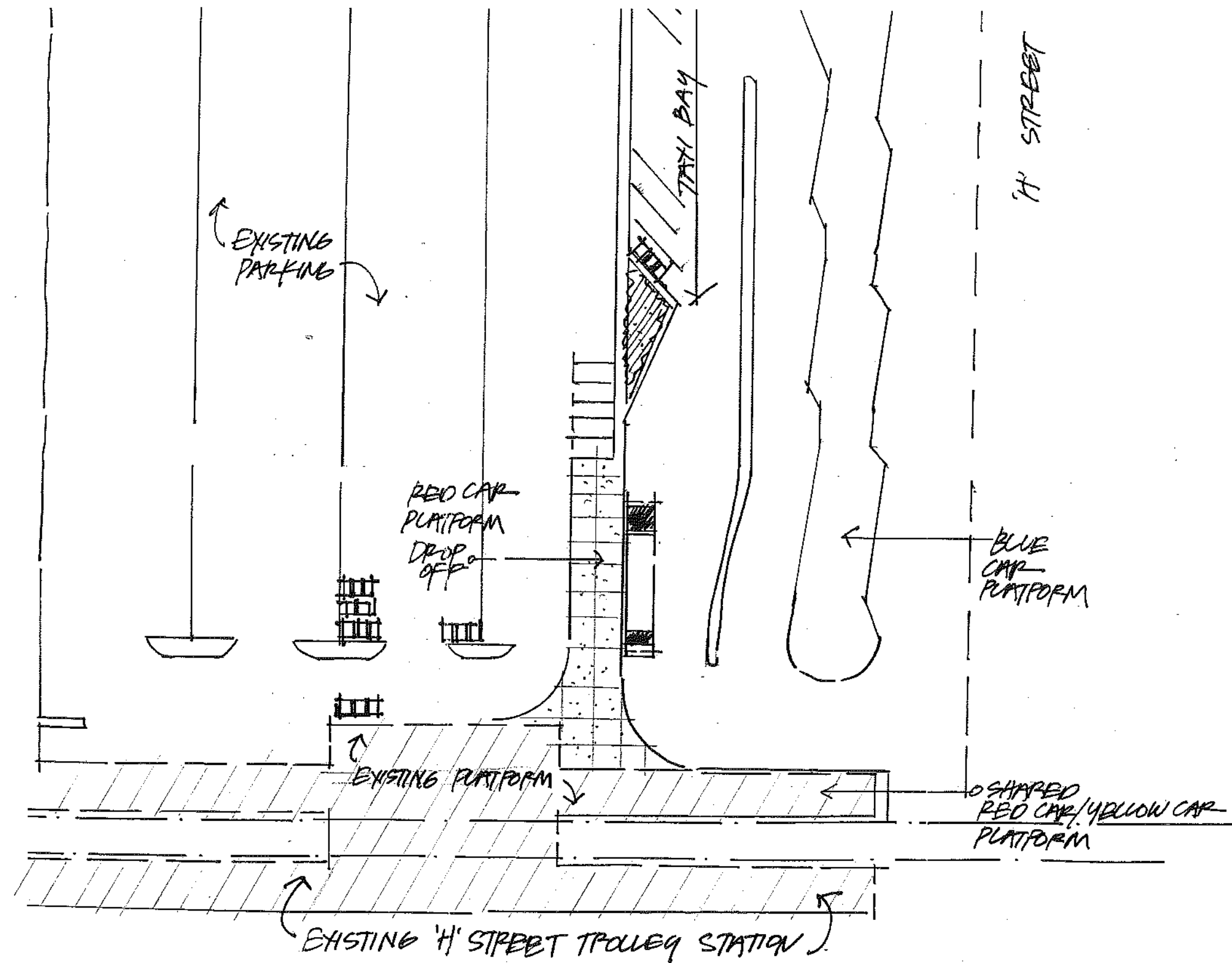
**MTDB Transit First Showcase**  
**H Street: H Street Trolley Station to Broadway**  
 Red Car Service Options

**Figure 5**



MTDB Transit First Showcase  
H Street: Typical Single Lane Median at Intersection  
Red Car Service Options

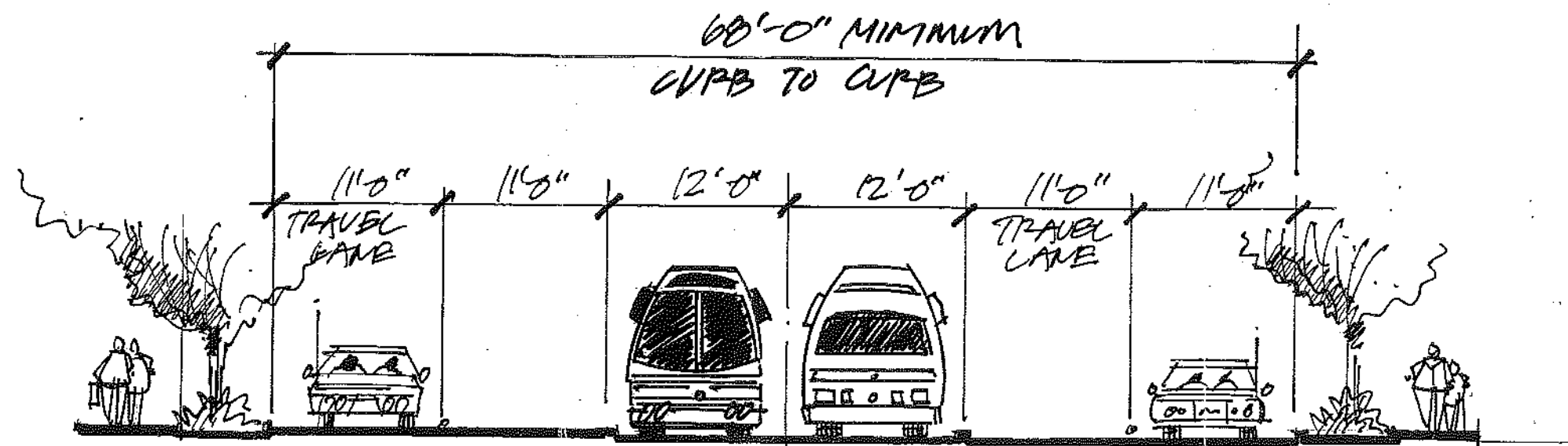
Figure 6



MTDB Transit First Showcase  
 H Street: H Street Trolley Station  
 Red Car Service Options

Figure 7

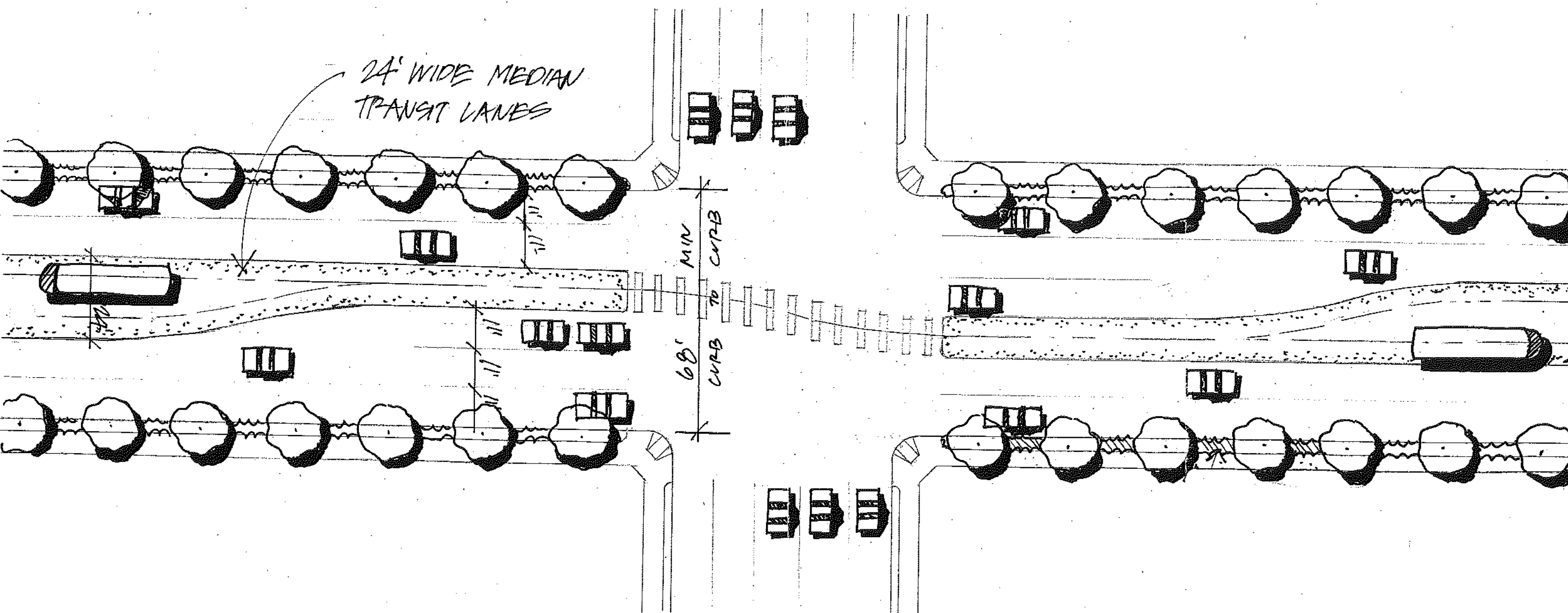




NOTE: EXISTING R.O.W VARIES  
FROM 65'- TO 71' CURB TO CURB

**MTDB Transit First Showcase**  
**H Street Section 1: Broadway to Third Avenue**  
Red Car Service Options

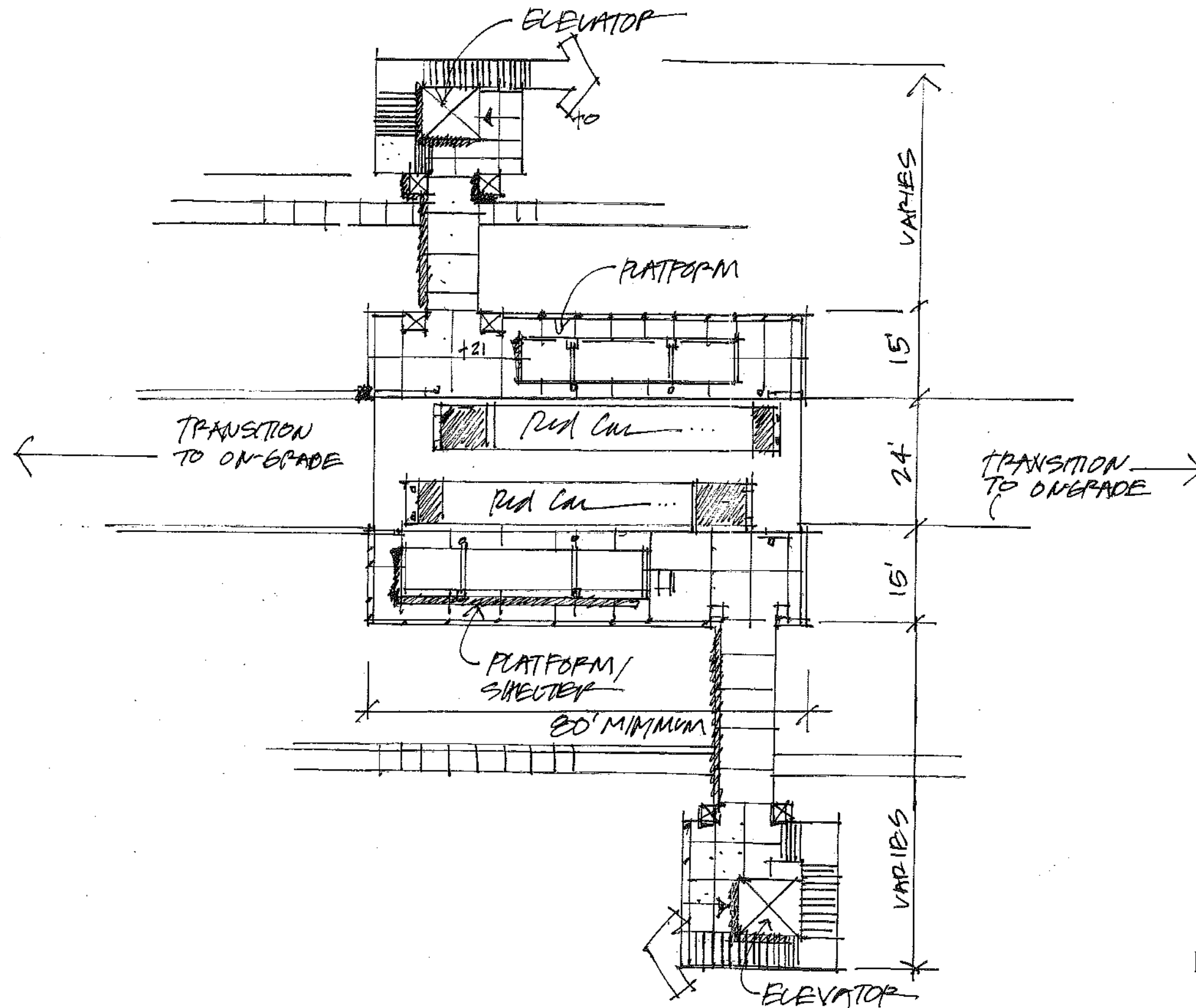
**Figure 8**



MTDB Transit First Showcase  
*H Street: Typical Dual Lane Median at Intersection*  
Red Car Service Options

Figure 9

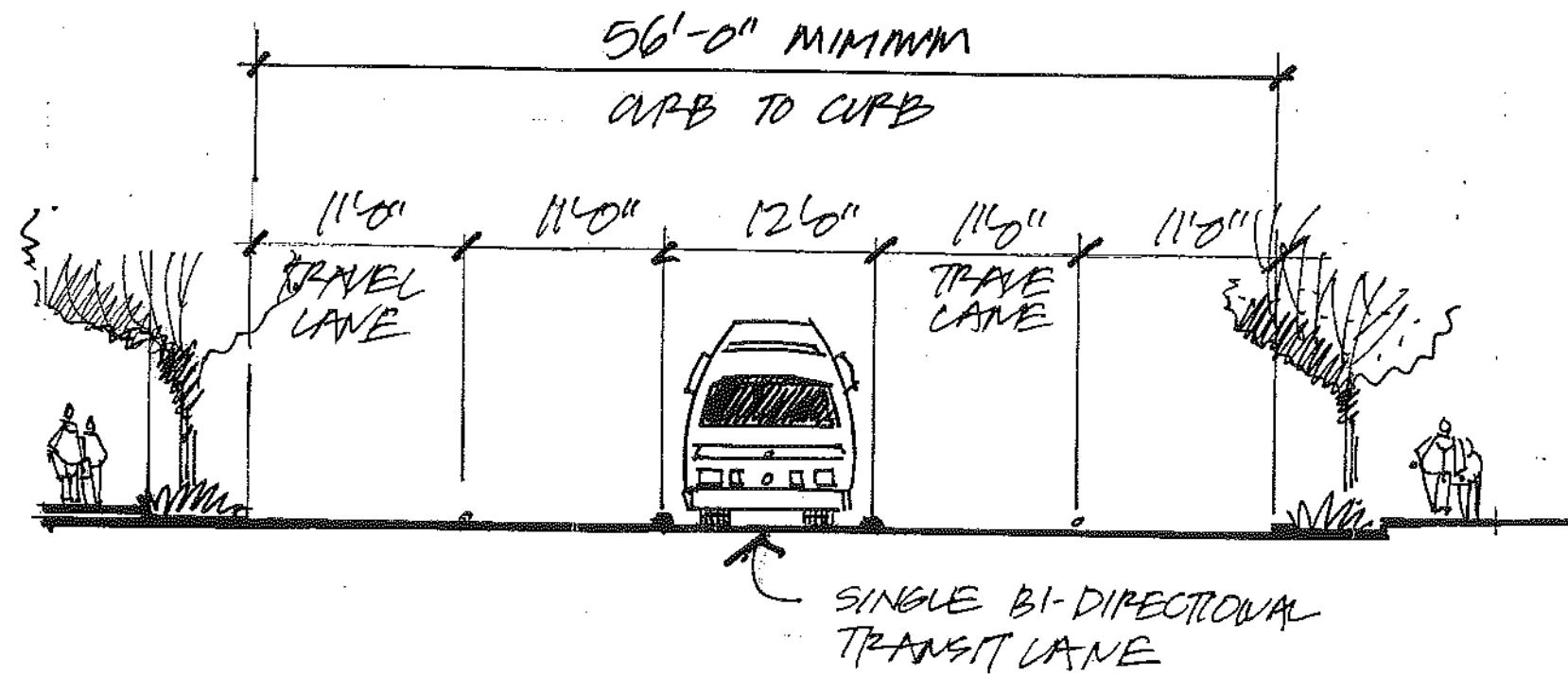




MTDB Transit First Showcase  
H Street Median Elevated Station  
Red Car Service Options

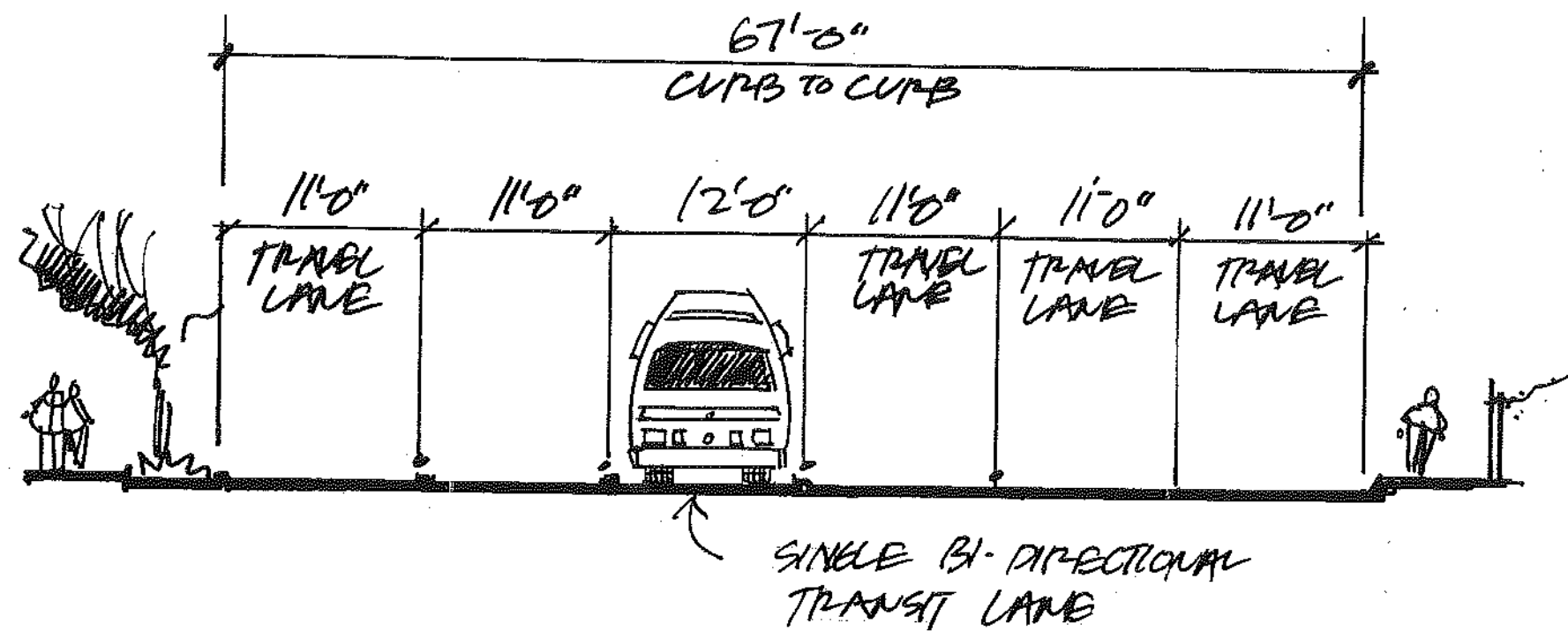
Figure 11





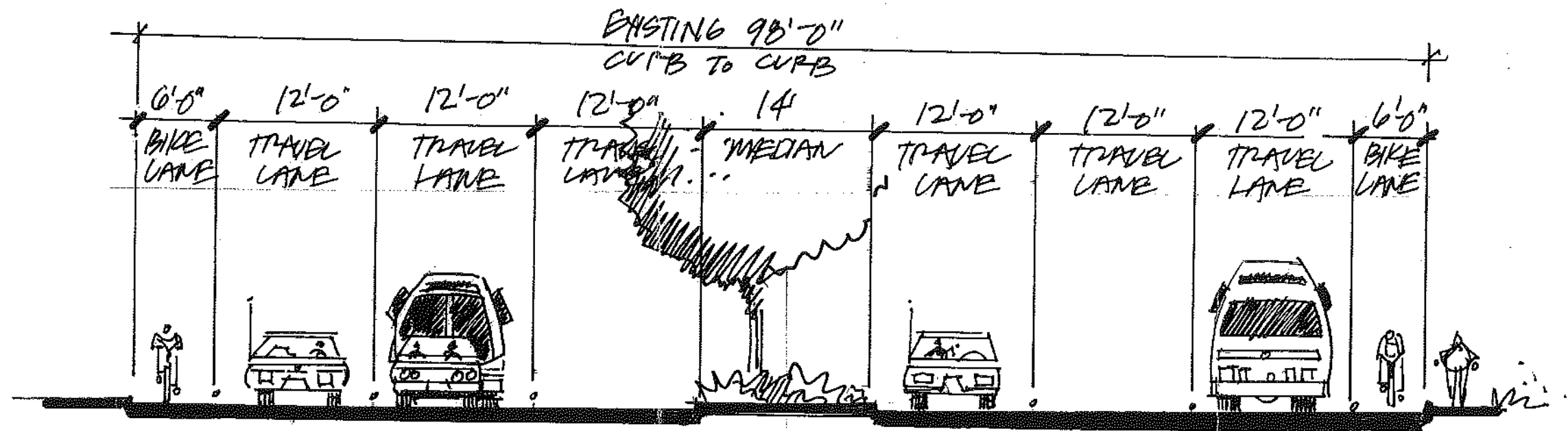
**MTDB Transit First Showcase**  
**H Street Section 1: Third Avenue to Hilltop Drive**  
 Red Car Service Options

**Figure 12**



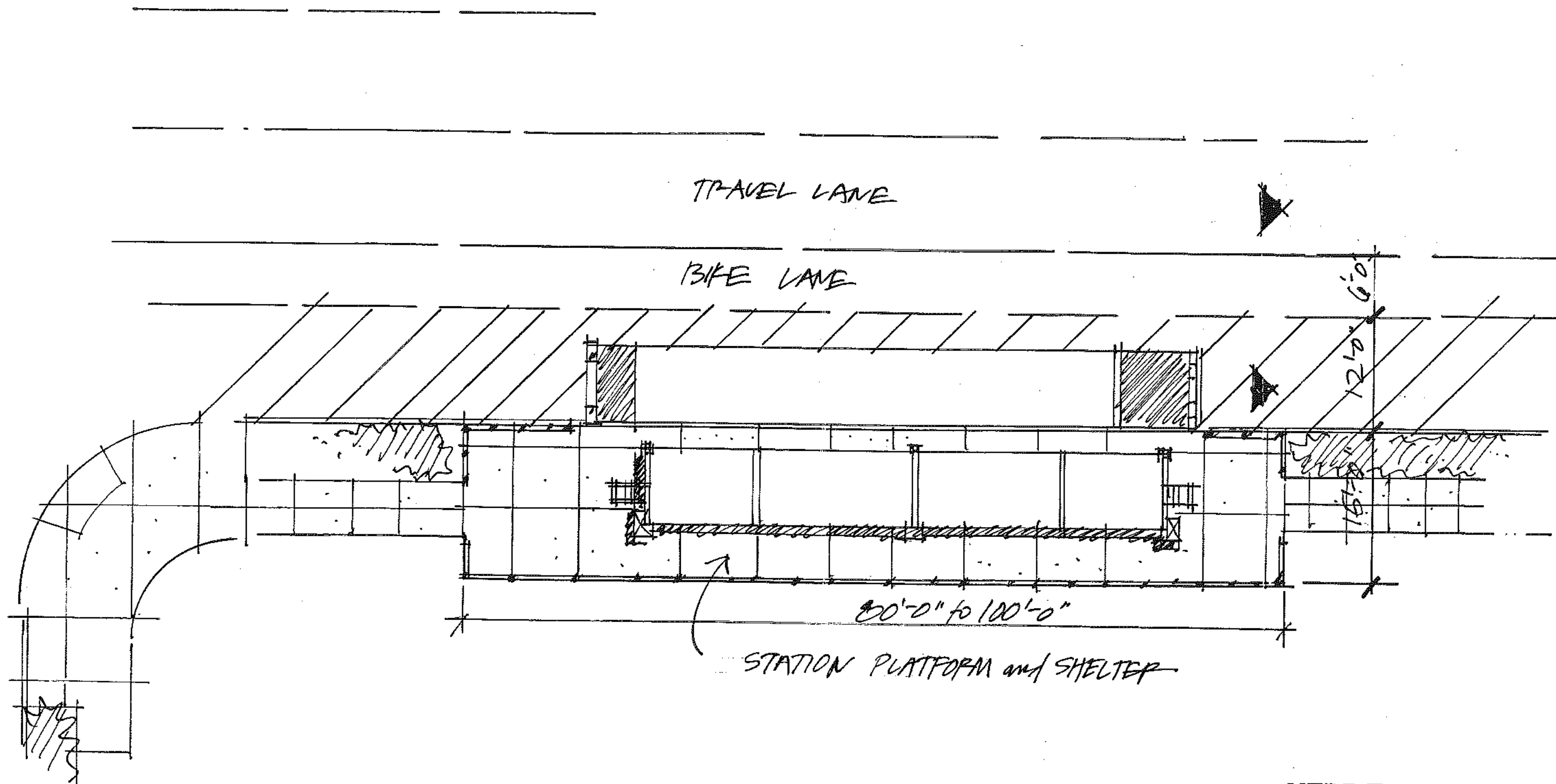
MTDB Transit First Showcase  
H Street Section 1: Hilltop Drive to Interstate 805  
Red Car Service Options

Figure 13



MTDB Transit First Showcase  
 East H Street – Mixed-Flow Transit Lanes  
 Red Car Service Options

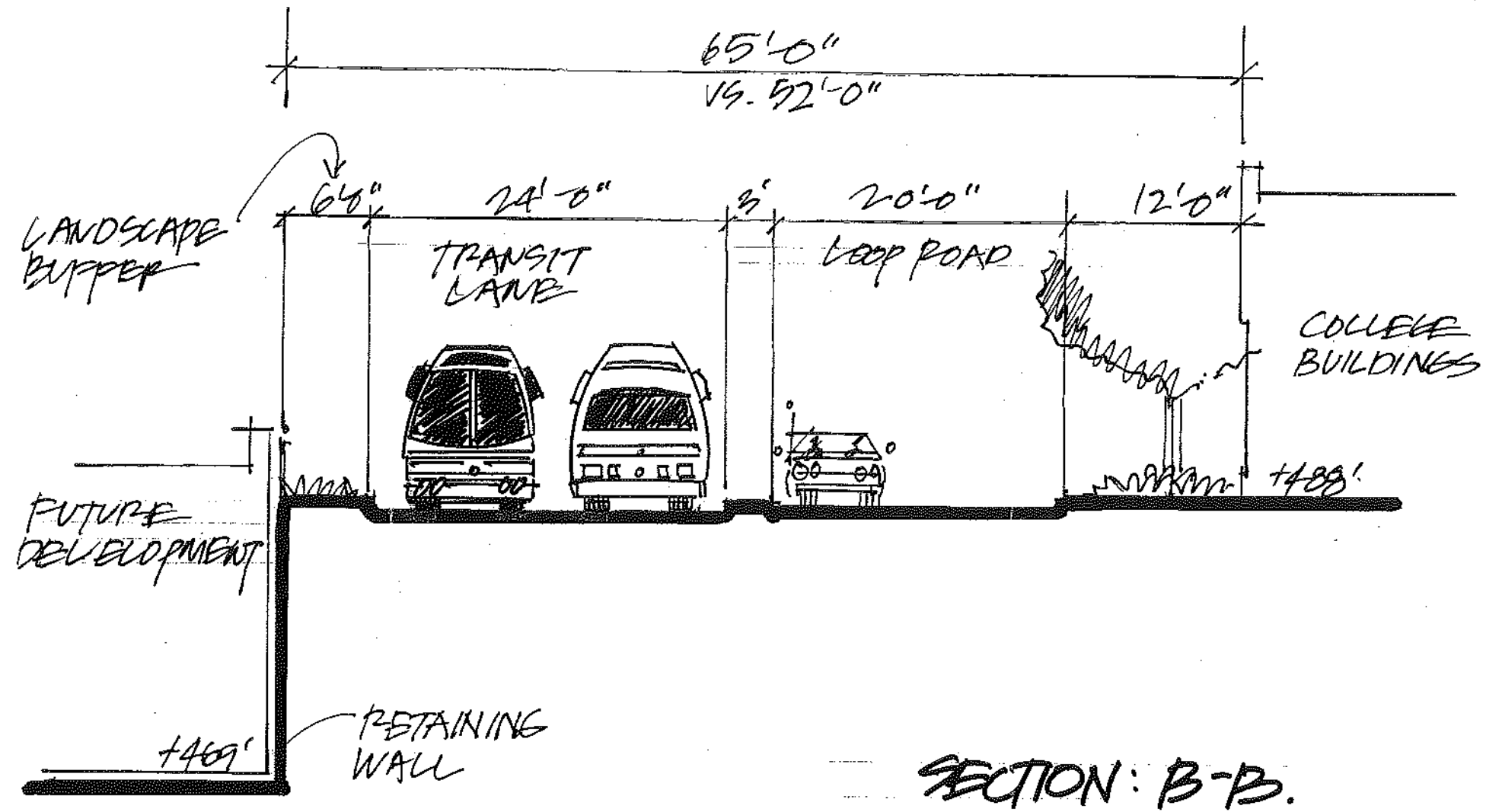
Figure 14



**MTDB Transit First Showcase**  
**East H Street: Typical Curbside Station**  
 Red Car Service Options

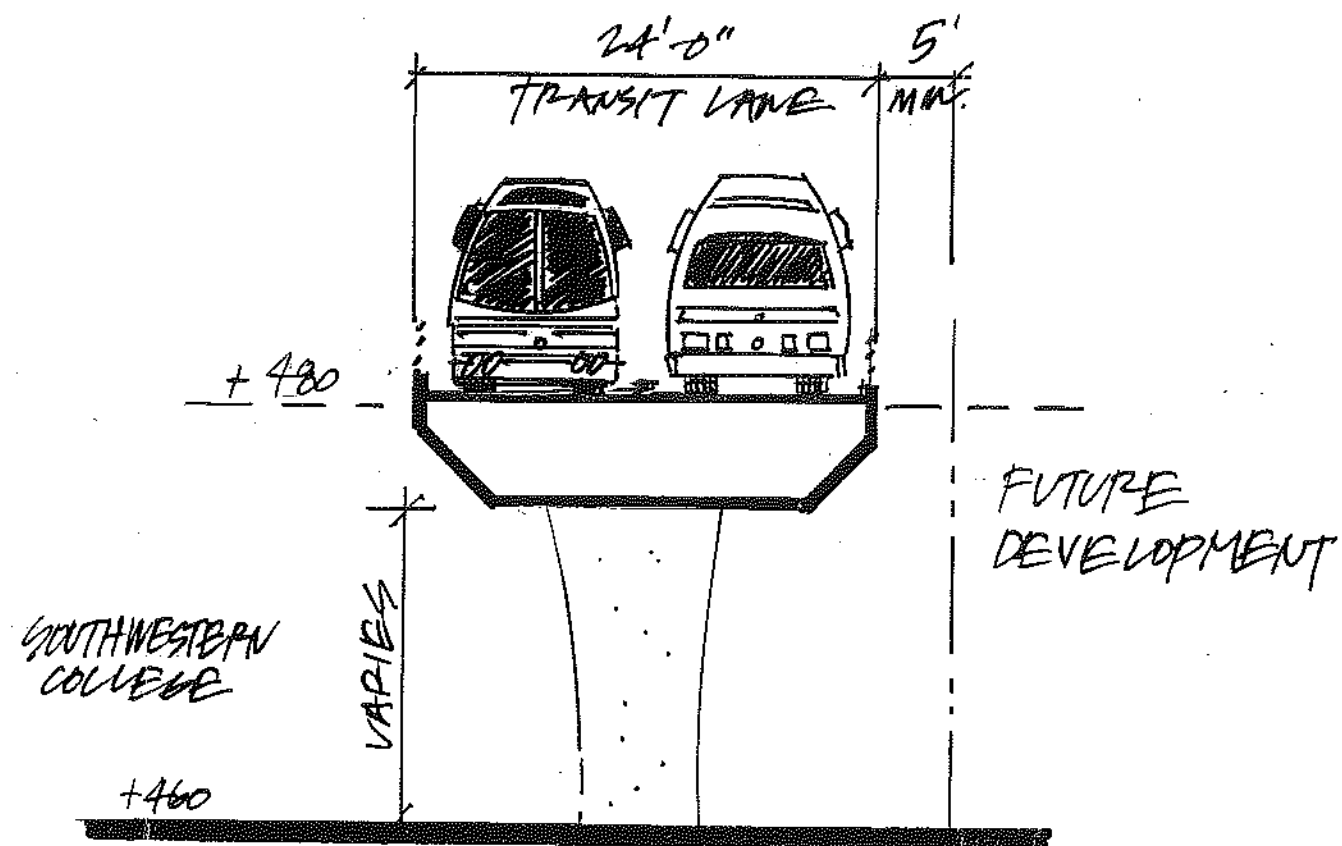
**Figure 15**





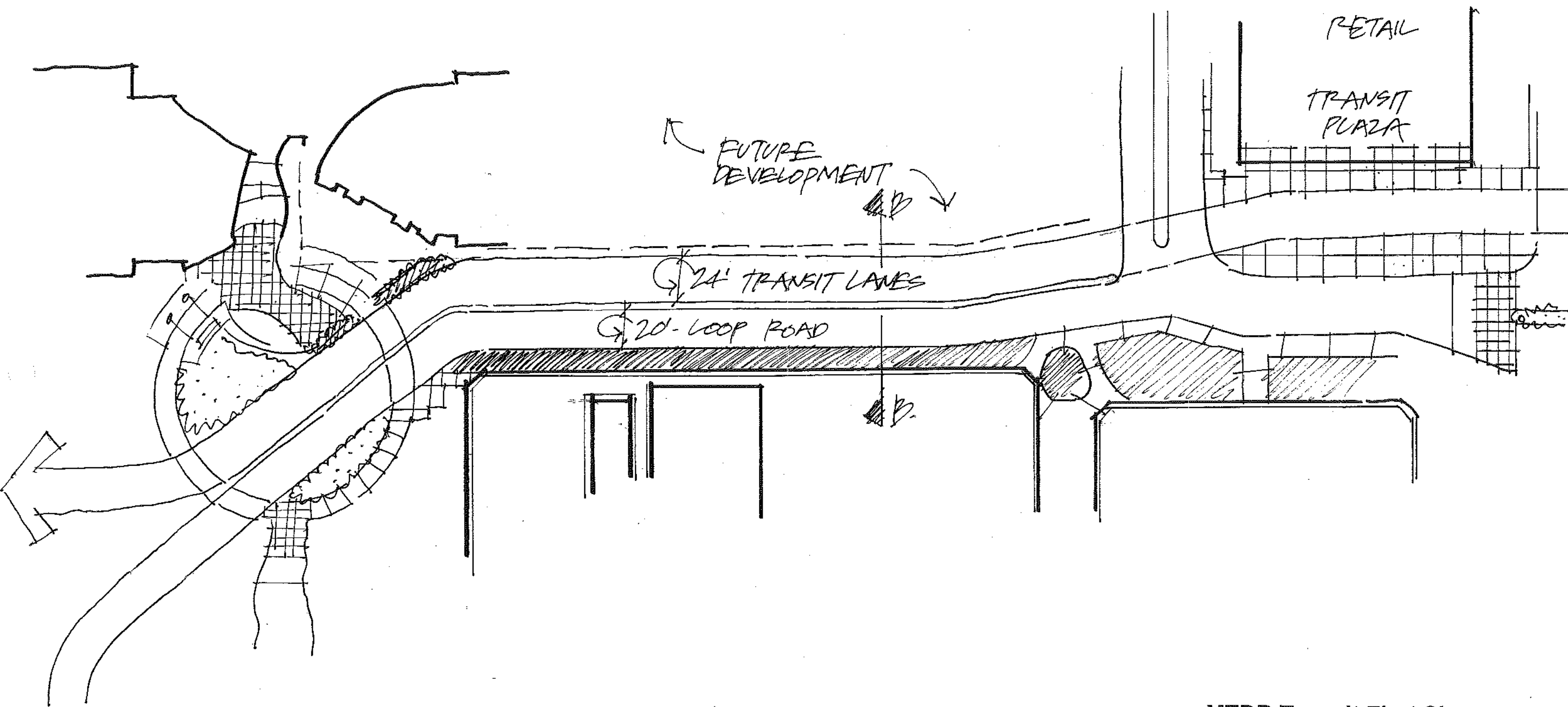
MTDB Transit First Showcase  
Southwestern College  
Red Car Service Options

Figure 16



MTDB Transit First Showcase  
 Southwestern College - Elevated Transit Lanes  
 Red Car Service Options

Figure 17



MTDB Transit First Showcase  
Southwestern College  
Red Car Service Options

Figure 18